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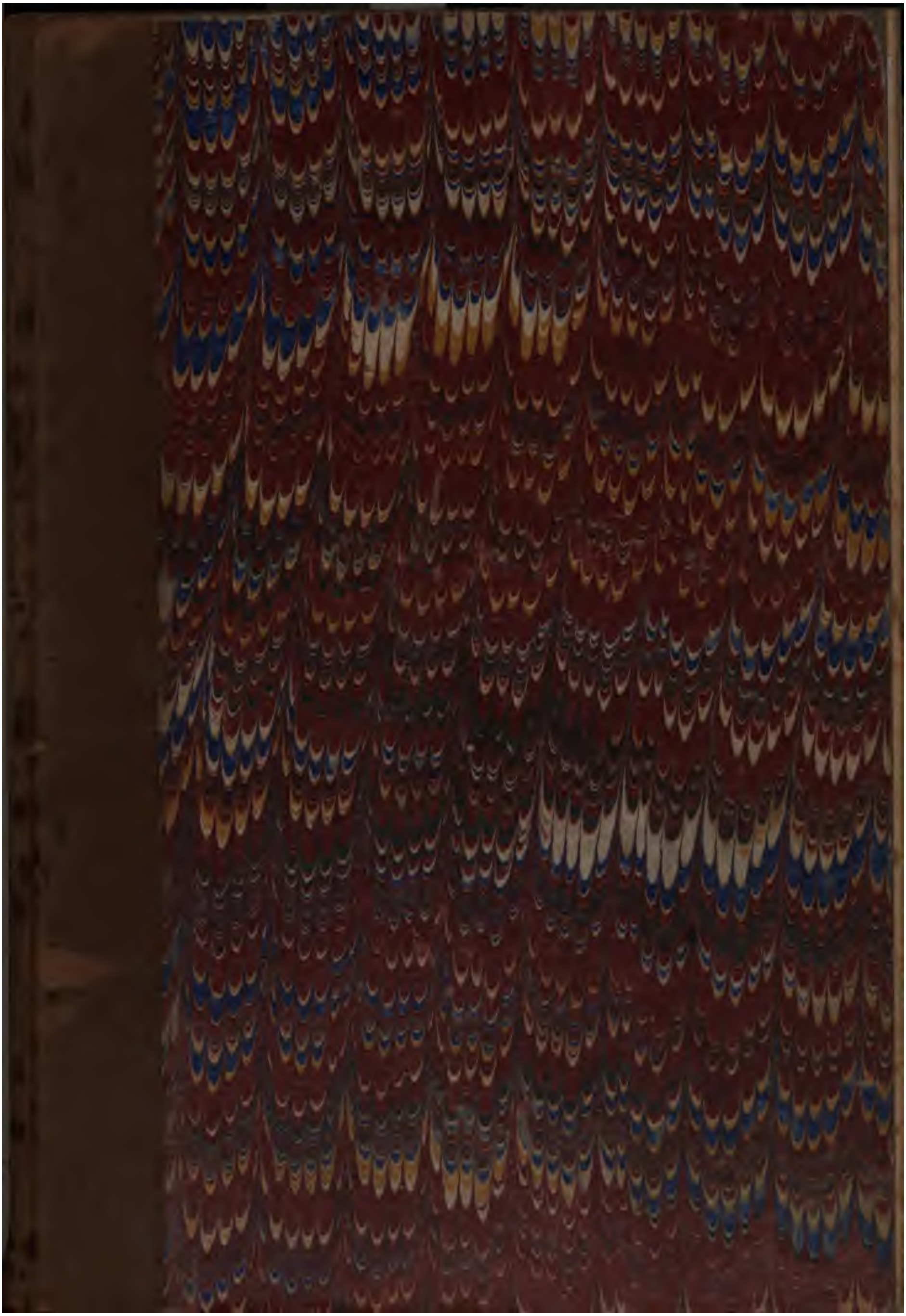

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ABRIDGMENTS

OF THE

Specifications

RELATING TO

THE MANUFACTURE OF

PAPER, PASTEBOARD, AND PAPIER MÂCHÉ.

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PREFACE.

THE Indexes to Patents are now so numerous and costly as to be placed beyond the reach of a large number of inventors and others to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of Invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Subject-matter, Reference, and Alphabetical Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the latter are sold have been added.

In an Appendix will be found the abridgments of eight Specifications omitted from the body of the work, but which are duly recorded in the Indices.

B. WOODCROFT.

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MANUFACTURE

OF

PAPER, PASTEBOARD, AND PAPIER MÂCHÉ.

A.D. 1665, February 16.—Nº 147.

HILDEYERD, Charles.—"The way and art of making blew "paper used by sugar-bakers and others."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1675, January 21.—Nº 178.

BURNEBY, Eustace.—"The art and skill of making all sorts "of white paper for the use of writing and printing, being a "new manufacture and never practised in any way in any of "our kingdomes or dominions."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1682, July 10.—Nº 220.

BLADEN, Nathaniell.—"An engine, method, and mill, whereby "hemp, flax, lynnen, cotton, cordage, silke, woollen, and all sorts "of materialls whereof all manner of pastboard, and of paper "for writing, printing, and for all other sorts of uses, hath been "or may be made, are prepared and wrought into paper and "pastboard much speedier and cheaper then by the mills now "used, being a new invencon never yett practised in any of "our kingdomes or dominions, and of great advantage to all our "loveing subjects."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1684, August 6.—Nº 238.

FULLER, Robert.—"The art and mistery for making of paper "and pastboards in whole sheets without peiceing, for hott and "cold pressing of cloath, which will be of great advantage to the "woollen manufacture, & never before practised in England."

[No Specification enrolled. Patent printed, 3*d.*]

PAPER, PASTEBOARD, AND PAPIER MÂCHÉ.

A.D. 1684, October 11.—N° 242.

JACKSON, Christopher.—"A mill or engine, either for wind "or water, which dissolueth, whiteneth, and grindeth raggs, and "prepareth other materials whereof paper & pasteboard may "be made all in farr less tyme than the mills hitherto in use doe."

[No Specification enrolled. Patent printed, 4*d.*]

A.D. 1685, July 4.—N° 246.

BRISCOE, John.—"The true & proper art & way for making "English paper for writing, printing, & other uses, both as good "& serviceable in all respects, and especially as white as any "French or Dutch paper (which hath been the great defect of all "other pretenders and undertakers who have hitherto had pattents "for making paper here), and that by such meanes and methodes "as have not hitherto been found out or practised by any in our "dominions, whereby much advantage will redound to the publick "by that manufacture's being made att home, & great numbers "of poor people employed thereupon."

[No Specification enrolled. Patent printed, 4*d.*]

A.D. 1686, January 9.—N° 249.

DUPIN, Nicholas, DE CARDONELS, Adam, DE GRUCHY, Elias, REGNAUTT, Marin, DE MAY, James, and SHALES, Robert.—"The art of makeing all sorts of writeing & printing "paper, & to imprint our arms upon such paper."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1691, August 22.—N° 271.

TIZACK, John.—"A way by an engine to be worked by one or "more men for the well & more easy oyling & dressing of leather "& cloth;" and which engine, it is said, may be of great use also to other trades; and among other purposes, of which there are a number given, it may be used for "pounding and making raggs "fitt to make paper and the like."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1691, November 6.—N° 284.

GIFFORD, Nathaniel.—"A new, better, & cheaper way of "making all sorts of blew, purple, and other coloured paper," and *this, it is said, is accom*plished "by several wayes, meanes, methods,

" engines, and instruements that were never yet used or practiced
" within this our kingdome, & will be much for the benefitt of our
" subjects."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1692, March 24.—N° 307.

HUTTON, Thomas.—" New invenčon of making pap' in greater
" quantities & with lesse charge & labour & more advantage than
" ever hath been yet practised, by a mill or engine to be driven
" either by water, wind, sailes, or water-wheels, & to work 80
" or more stampers at once," &c.

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1695, April 6.—N° 339.

OLIVER, Peter.—" An engine for beautifying of all manner
" of linnen, cloath, calicos, silkes, and stuffs bare of wooll, paper,
" and pastboards, by glazing, slicking, and smoothing of the same
" much better and finer then now is used or done."

[No Specification enrolled. Patent printed, 3*d.*]

A.D. 1747, November 3.—N° 625.

JOHANNOTT, Josias.—" Making cartridge or any other sorts of
" paper that will not hold any fire " by putting " to an engine of
" stuff that holds about one hundredweight of raggs," " twenty-
" eight pounds of calcined salt, & fourteen pounds of salt
" armoniack, seven pounds of copperas, & seven pounds of allom,
" and size it three times."

[Printed, 3*d.* See Rolls Chapel Reports (sixth), p. 122.]

A.D. 1772, November 20.—N° 1027.

CLAY, Henry.—" Making in paper high varnished pannels or
" roofs for coaches, and all sorts of wheel carriages and sedan chairs,
" pannels for rooms, doors, and cabins of ships, cabinets, book-cases,
" screens, chimney-pieces, tables, tea-trays, and waiters, " " by
" pasting several papers upon boards or plates of regular thick-
" nesses on each side the same " until the thickness required is attained; the edges are cut off or planed " until the board
" or plate appears," and the papers taken off such boards or plates are screwed or fastened on boards or plates, and are rendered inflexible by drying in a hot stove, while at the same

time they are rubbed with or dipped in oil or varnish, which "drenches into them," and secures them from damps, &c. The papers so made are worked in every respect like wood, and into articles such as tea-trays and dressing-boxes. The articles may be "coated with colour and oils sufficient to make the surface even, "and are then japanned and high varnished."

[Printed, 3*d*. See Rolls Chapel Reports (sixth), p. 161.]

A.D. 1787, September 17.—N° 1622.

HOOPER, Samuel.—Manufacturing printing paper "free from "specks & iron moulds" by adding to "the best rags prepared "in the engine till fit to make into paper," in certain proportions, "alabaster or plaister," "talc or talk," and "plaister of Paris, "which is of a more binding quality than the English, all of "which must be calcined and reduced to powder;" to these add "a certain proportion of best white sugarcandy pounded." These are "incorporated with the pulp of the rag, with a sufficient "quantity of size made from rice and pearl barley to give the "paper firmness." The above substances may be either of them separately used for the purpose, being nearly of a similar nature, and if so used they are to be in certain proportions; "but the "mixture of the several articles together," it is said, "produces the best effect."

[Printed, 3*d*. See Repertory of Arts, vol. 3, p. 377; Rolls Chapel Reports (sixth), p. 177.]

A.D. 1788, August 12.—N° 1662.

DUCREST, Charles Lewis.—The title of this invention is "Making paper for the building of houses, bridges, ships, boats, "and all sorts of wheel carriages, sedan chairs, chairs, tables, and "book-cases, either entirely of paper, or wood & iron covered "with paper," and this may be done either by pasting over a mould of the article required covered with canvas "layers of "paper until the necessary strength is acquired." "The "mould is then disjointed and taken out and the canvas taken "from the paper." After strengthening the edges by wood and pasting layers of paper over this wood, "the moisture and damp "are entirely extracted," by drying in a hot room or stove, "when five or six coats of common varnish are laid on and well "dried in; afterwards a new coat of varnish is added, on which "*whilst wet*" a fine powder of pumicestone and steel filings in certain proportions is to be sifted on; after thorough drying " new coats of varnish are laid on."

In constructing bridges, the ropes are covered with layers of paper and treated as above; and if articles of wood or iron are employed, they are covered with paper and submitted to similar treatment.

[Printed, 4*d.* See Rolls Chapel Reports (sixth), p. 179.]

A.D. 1790, January 20.—Nº 1723.

HOOPER, Samuel.—The title of this invention is "Manufac-" turing from leather, leather cuttings, shavings or parings of every " kind of leather whatsoever, and white leather, or leather for " covering the fronts, backs, sides, and tops of coaches, chariotts, " postchaises, sedan chairs, and trunks, and for making band, " hatt, and other boxes, waiters, tea-trays, inkstands, ink potts, " snuff and tobacco boxes, and other things, mouldings, cornices, " ceiling and other ornaments for rooms, and for binding of books; " and, with some variation in the process, paper for copperplate " printing, brown, white-brown paper, & for drawing."

In making leather for the above purposes, the shavings, cuttings, or parings are put into an engine, washed and pulped, size added according to texture required, and afterwards moulded as required.

In making brown paper, a fourth part or more of junk or hemp with a little fine clay is to be added to the shavings, cuttings, and parings of leather "into the engine, & beat till reduced to a " proper pulp. The mode of working is the same as commonly " practised for making brown paper."

In making white-brown paper, for junk or hemp substitute the same quantity of the coarsest rags and leave out the clay.

In making "white leather paper for drawing & printing of " copperplates, add to the cuttings, shavings, or parings of " leather, including white leather, three-fourths or more of fine " white rags," pulp the same, and either add size to "the pulp in " the engine or after the paper is made in the usual way."

[Printed, 8*d.* See Repertory of Arts, vol. 8, p. 371; Rolls Chapel Reports (sixth), p. 182.]

A.D. 1790, August 21.—Nº 1774.

PHIPPS, John.—The title of this invention is "A method to " facilitate the acquirement of several of the useful & polite " arts by an easy, effectual, and expeditious manner of teaching

" writing & drawing, which is done by constructing or fabricating the moulds, wove or washing wires, or other wire in or on " which paper is made, so that every sheet shall come out of or " from them properly adapted for the purposes, when finished by " the maker in the usual manner, by having the lines made & " the copies set for writing, & the outlines & sketch for " drawing, by what is called the water-mark, for the learner to " trace over;" and this is to be effected by causing the paper to receive from the moulds an " impression or delineation for the " learner to trace over."

[Printed, 3*d.*]

A.D. 1790, November 16.—N° 1783.

NIGHTINGALE, Thomas.—The title of this invention is " A " machine for calendering, glazing, & dressing of muslin, " calicoe, cotton, linen, woollen, silks, paper, gauze, mohair, and " other articles in a superior manner to any which had theretofore " been used or discovered, and which would be of great public " utility;" and the machine, which is described by drawings, is so constructed that iron rollers move with much greater velocity than wooden ones, thereby causing " a friction against the wooden " roller, which produces a high gloss." The iron rollers move faster by having wheels of different sizes " fixed upon the spindles " of each separate roller, & so regulated as to increase or decrease " the friction as may be wished, according to the size of the " different wheels." A cut or fluted iron roller for glazing is also introduced.

[Printed, 10*d.* See Rolls Chapel Reports (sixth), p. 183.]

A.D. 1792, April 25.—N° 1872.

TAYLOR, Clement, and TAYLOR, George.—The title of this invention is " A new method of decomposing or removing all sorts " of colours in linnens & cottons, & for whitening all other " kinds of linnens & cottons in different stages of the paper manufactory," and this is carried out as follows:—Reduce the rags to a pulp, treat the pulp with a certain amount of pearlash, wash this away, and submit it to the action of " dephlogisticated marine " acid " for a given time in a bleaching machine, afterwards wash the acid away with water. The process for obtaining " dephlo-" *gisticated marine acid* " from manganese, sea salt, and oil of vitriol is detailed, and likewise the bleaching machine to be employed is described. It is a tapering cylinder revolving upon axis, and fitted in the interior with boards, through which are a number of pins, and with holes for admitting and withdrawing " pulp " or half stuff," " liquor or water."

[Printed, 5*d*. See Rolls Chapel Reports (sixth), p. 145.]

A.D. 1792, November 28.—N° 1922.

CAMPBELL, Hector.—The title of this invention is " An im-" proved method of destroying or taking away all the carbonic, " oleaginous, and colouring elements & particles in linen, cotton, " hemp, & in all coloured rags & other materials used in making " paper, in a manner hitherto unattempted in this kingdom, " & at a much less expence than any method now in use;" and this is effected upon " rag, coloured or not, or pulp, or any cotton, " flaxen, hempen, or any other material fit to make paper," by, if they require it, boiling in a caustic ley, otherwise, when washed, and " the superabundant quantity of water being pressed out," they are so distributed in a chamber that their surfaces may receive " the bleaching power " discharged into the chamber from retorts containing mixtures of manganese, sea salt, and sulphuric acid in certain proportions.

[Printed, 3*d*. See Repertory of Arts, vol. 1, p. 156.]

A.D. 1793, June 27.—N° 1959.

ELLIOT, Joseph Moseley.—The title of this invention is " A machine or engine for working and binding wire, and making " of moulds used by paper manufacturers, & for the more correct & " expeditious method of working & binding of wire for making " of sives, screens, meat safes, &c." The machine is particularly described by drawings. It consists of a frame shaped like a writing desk, with a rack of brass having a number of teeth upon the upper edge from one end to the other, and which is moved from right to left alternately by means of a handle fixed on an axis, at the further end of which is a wheel with teeth, which teeth take alternately into two sets of teeth upon the rack, and produce the direct and retrograde motion. In this frame is fixed another frame, with a number of jacks, which jacks have each at their axis a wheel with teeth, " which wheels are acted upon & " put in motion by the rack before mentioned, but they are so

" constructed that their motion shall cause a direct motion in " the jacks, tho' the motions of the wheels are direct & retro- " grade, alternately answering to the motion of the wrack which " moves them."

[Printed, 8*d*.]

A.D. 1793, August 16.—N° 1960.

SCOTT, William, and GREGORY, George.—This invention is for " A method of heating the water and stuff in vats for making " paper by steam ;" and it is stated that "the common & ordinary " method now in use" " is by introducing fuel into a pan or vessel " placed within the vat," containing the water and stuffs, but by passing steam from a boiler through pipes into vats containing the water and stuffs a great advantage in every way, it is said, is attained.

[Printed, 7*d*. See Rolls Chapel Reports (sixth), p. 145.]

A.D. 1794, November 28.—N° 2026.

CUNNINGHAM, William.—The title of this invention is " A method by which, in the manufacture of paper, rags known by " the name of grays and ropes can be made into tea crown paper, " & rags known by the names of tea crown & Bible crown " rags & thirds can be made into paper called pot, small post, " demy, royal inferior, or papers of similar qualities, & rags " denominated seconds into paper called fine imperial, royal, " super-royal, writing royal, and medium, writing demy, thick " post, thin post, fine foolscap, & all other papers which have " been hitherto reckoned of the finest qualities, & by which " paper can be made from fine rags of a finer and more beautiful " quality & colour than was ever before manufactured."

The pulp or rag is boiled for a specified time in a potash ley, the making of which is described. This is performed in a copper having " a false bottom made of wood bored full of small holes." The water is allowed to drain out of the pulp or rag placed upon a drainer, when it is put upon " moveable wooden grates," "into "a steam chest, or any vessell that will contain gas ;" to this box is fixed a retort, from which gas is evolved from a mixture of manganese, sea salt, and oil of vitriol, and passes through the pulp or rags. When the gas is all "brought off" from the *materials in the retort* the goods are washed, again boiled in the potash ley, washed, and submitted to gas as before, only the materials for obtaining the gas differ in strength, and also muriate of lime is substituted for sea salt. It may be necessary to repeat the operation upon some goods a third time and much in the same way. Coloured goods are to be soured before boiling with the ley. "This sour destroys the particles of iron contained in "printed cloths, which, if allowed to remain, render the bleaching process imperfect."

[Printed, 4*d.* New Repertory of Arts, vol. 2, p. 222.]

A.D. 1795, February 28. Nº 2040.

BIGG, JOHN.—Bleaching paper (as follows): —The moist paper is put upon racks in a box or receiver, "if a thick paper, about "six or seven sheets thick; if a thin paper, nine or ten sheets "thick." A tubulated retort, containing manganese, common salt, and oil of vitriol in certain proportions, is connected with this box, and heat is applied to the retort, and the operation continued about two hours. After this the paper is pressed, hung up to dry, and before being sized it is wetted with a solution of alum of a given strength in cold spring water.

Another mode is to make a "liquor" by introducing the neck of a retort with the above materials into water. "The paper is to "be wet out & soaked" in this liquor "till it is properly "bleached, after which it is pressed, dried, and allum'd as in the "other process."

[Printed, 8*d.* New Repertory of Arts, vol. 6, p. 250.]

A.D. 1795, November 19.—Nº 2075.

CARPENTER, ELIAS.—The title of this invention is "A method "of bleaching paper in the water leaf or sheet, & sizing it "without drying, whereby the manufacture of it will be improved, "by shortening its process, lessening its expence, & considerably "increasing its value."

The bleaching is effected in "a stout deal box or case, which "must be perfectly closed, capable of confining water or steam." This box has "a hole cut in one side near the top to receive the "neck of a retort;" it also has a false bottom perforated with holes to allow the gas, which has been found obnoxious to the workmen, to pass through and be absorbed into a "lixivium," prepared from pearlashes and lime, placed underneath it. The paper is placed in frames in the box, the lid secured, the neck of the retort luted into the box. Manganese and salt in certain proportions are put into the retort, "then vitriolic acid must be "mixed with an equal quantity of water impregnated with the "fumes of burning sulphur, and put into the other ingredients." After the paper has been exposed for some hours "to the vapour "or steam arising from this preparation," it "will be found "sufficiently whitened, & may be taken from the box & sized."

The size to be employed is made by boiling pieces of skins, straining the liquid, and mixing it with given quantities of alum, calcined vitriol, and gum arabic. "Then press and finish it in "the usual way."

"This process will answer extremely well for a rag that is devoid "of sheaves, and wants only a brightness of colour; but where "the rag is of coarse bad quality, abounding with sheaves," it is either to be macerated or boiled in a lixivium prepared from mixing pearlash, lime, and water in certain proportions, drawing off the clear solution. "When working a close wrought rag made of a "hard twisted thread, & abounding with sheaves, it will be found "necessary to pass it through a washing engine, to open it, to "give the lixivium & bleaching principal free access to its "internal parts."

[Printed, 4*d*. See Repertory of Arts, vol. 5, p. 369; Rolls Chapel Reports (sixth), p. 190.]

A.D. 1796, November 19.—N° 2147.

COBB, THOMAS.—"A method of making coloured paper" by applying the "processes commonly used in dyeing of linnen, cotton "silk, or wool" to the rags or materials "sufficiently washed by "means of the paper engine, made white, and reduced to half "stuff;" only a clear decoction or infusion of the dyeing material is employed. "When heat must necessarily be employed in the dyeing "process," the dyeing vessels should be furnished with false bottoms. "When the half stuff is sufficiently coloured," it is returned to the engine and washed, and "beat by the paper engine "as usual into pulp or stuff for the vat, after which it is made into "paper in the usual manner. Colours which dye in the cold may "be put into the engine, or the stuff chest, or in the vat, or in any "proper vessel for dyeing."

[Printed, 3d. *See* Rolls Chapel Reports (sixth), p. 191.]

A.D. 1800, April 28.—N° 2392.

KOOPS, Matthias.—" Extracting printing & writing ink from " printed & written paper, & converting the paper from which " the ink is extracted into pulp, and making thereof paper fit for " writing, printing, & other purposes." The printed and written papers, after certain selection, are to be divested of their " size by " means of hot water," and afterwards boiled in solutions of American potashes and lime water mixed, and of a different strength, accordingly as the paper has been printed with German or English ink, or ordinary writing ink. After washing with water, the material resulting from such treatment is to be thoroughly cleansed from the alkali by washing in the engine; and to brighten the colour, so much of the pulp is to be treated with a solution prepared by distilling a certain amount of marine salt with a certain amount of " black wad " and vitriolic acid into soft water. This pulp is then to be ground in order to be made into paper.

Written paper assorted is cleansed from size by boiling water, the water pressed out; it is put into a wooden case lined " with a " thick mixture of white lead & water," the neck of a retort containing the before-mentioned ingredients is attached and heat applied, when the article is impregnated so that it becomes whitened; it is conveyed " into the engine to grind into a sub-" stance for making paper."

[Printed, 8*d*. See Repertory of Arts, vol. 14, p. 225; Davies on Patents, p. 244; Rolls Chapel Reports (sixth), p. 107.]

A.D. 1800, August 2.—N° 2433.

KOOPS, Matthias.—" Manufacturing paper from straw, hay, " thistles, waste & refuse of hemp & flax, & different kinds of " wood & bark."

[No Specification enrolled.]

A.D. 1801, February 17.—N° 2481.

KOOPS, Matthias.—" Manufacturing paper from straw, hay, " thistles, waste & refuse of hemp & flax, & different kinds " of wood & bark, fit for printing & other useful purposes, by " steeping for a given time in lime water," to which, in some cases, " christal of soda or potash " may be added, afterwards boiling in clean water, in which, in some cases, a certain quantity of " chrys-" tal of soda or potash " may be dissolved, then washing and again boiling, after which pressing, when proceed to manufacture the material “into paper by the usual & well-known processes of “ making paper.”

In the case of straw or hay, they are cut into portions of about two inches in length by a chaff-cutting machine; with thistles, they are “cut when the bloom begins to fall therefrom,” dried and cut into lengths of two inches; and with wood, it is first reduced into shavings, then cut “with the chaff-cutting engine into lengths “ of about two inches;” but “wood which contains much turpen- “ tine or resinous matter cannot usefully & beneficially be made “ into paper.” Some of the substances, previous to steeping in the lime water, may be boiled for a given time in ordinary water. And again, “in some cases it has been found to be advantageous “ to suffer the pressed material to ferment & heat for several “ days before reducing it to pulp, in order to its being made or “ manufactured into paper.”

[Printed, 4*d*. See Repertory of Arts, vol. 1 (*second series*), p. 241; Webster's Reports, vol. 1, p. 418; Webster's Patent Law, pp. 16, 71, 83, 100 (also p. 127, cases 35 and 41); Carpmael's Reports on Patent Cases, vol. 1, pp. 175 and 186; Davies on Patents, pp. 11 and 244; Parliamentary Reports, 1829, p. 192; Vesey's Chancery Reports, vol. 6, p. 599; Bosanquet and Puller's Reports, vol. 3, p. 565; Rolls Chapel Reports (sixth), p. 200.]

A.D. 1801, April 20.—N° 2487.

GAMBLE, JOHN.—The title of this is “An invention of making “ paper in single sheets without seam or joining, from one to “ twelve feet & upwards wide, & from one to forty-five feet “ & upwards in length.” This invention is particularly described by diagrams. A sheet of copper joined at both ends, passing round two cylinders, forms an endless web, and this receives the pulp, which, travelling along, passes through between cylinders. The paper is afterwards wound from between the cylinders upon a wooden roller, which, when loaded, another is substituted in its place without stopping the machine.

[Printed, 1*s*. 3*d*. Webster's Reports, vol. 1, pp. 132, 369, 417; Webster's Patent Law, pp. 49, 82, 86, 88 (also p. 132, cases 79 and 83); Carpmael's Reports on Patent Cases, vol. 1, pp. 434, 437, 440; Barnewall and Cresswell's Reports, vol. 6, p. 169; Dowling and Ryland's Reports, vol. 9, p. 215; Carrington and Payne's Reports, vol. 1, p. 558; Ryan and Moody's Nisi Prius Cases, p. 187.]

A.D. 1802, Sept. 27.—N° 2649.

PLEES, WILLIAM.—The title of this invention is “Certain “ methods of manufacturing paper for various purposes, & of “ *applying one of the* said methods to purposes for which paper “ *hath never before been* used.”

And first.—" Making paper of various colours in the same sheet, " by adding substances of different tints," and " substances " which are capable of being made to bed sufficiently into the " stuff which forms the ground," such as " paper stuff, paper " shavings, rags of linen, cotton, or silk, straw, hay, chaff, tan, " tobacco, snuff, bark, bran, bronze, spangles, frosts, foils," &c.

Second.—" Applying the above " material and any other " paper " capable of being rendered elastic to the purposes of leather, by " tanning, currying, or dressing them in any of or all the various " methods already known for finishing leather from the hide or " skin."

[Printed, 3*d*. See Repertory of Arts, vol. 2 (*second series*), p. 406; Rolls Chapel Reports (sixth), p. 151.]

A.D. 1803, June 7.—N° 2708.

GAMBLE, JOHN.—" Improvements on & additions to a machine " for making paper in single sheets without seam or joinings, " from one to twelve feet & upwards wide, & from one to forty " feet & upwards in length."

The machine is particularly described by diagrams in Patent N° 2487, and this invention indicates that that machine may be improved in six different parts by the addition or substitution of different things. As an example :—Two wheels or flys of the same kind, one revolving in the material or pulp brings it up, and the other, a smaller one, revolving above the surface of the pulp, receives it from the first, and delivers it through the cap. Also, instead of producing the shake or side agitation by the outside action of a wheel, the same is produced by causing a pin to move in a groove or cavity cut waving in the face of a wheel, &c.

[Printed, 3*d*. See Webster's Reports, vol. 1, pp. 132, 369, 417; Webster's Patent Law, pp. 49, 82, 86, 88 (also p. 132, cases 79 and 83); Carpmael's Reports on Patent Cases, vol. 1, pp. 434, 437, 440; Barnewall and Cresswell's Reports, vol. 6, p. 169; Dowling and Ryland's Reports, vol. 9, p. 216; Carrington and Payne's Reports, vol. 1, p. 558; Ryan and Moody's Nisi Prius Cases, p. 187.]

A.D. 1805, March 23.—N° 2830.

JONES, THOMAS.—" Compositions for the purpose of making " trays, waiters, & various other articles, & new modes or " methods of manufacturing the same, (that is to say,) by presses " or stamps." These compositions may consist of rope and rags in certain proportions reduced to pulp, and it is preferred to add vitriol *or other acid* till slightly acid; or the composition may be of nettles and rope, or rags alone, or ropes alone, but adding to them a certain amount of "dung, hurds, nettles, or any other "animal or vegetable substances" which will felt, such as flax, hemp, waste paper, &c. is preferred. A frame of the article required is put upon a sieve, and a sufficient quantity of the composition or pulp collected into it to make, "without pasting or "adding thereto," the article thick enough in one solid mass; the pulp is turned from the frame on to clothes, pressed between boards, and afterwards pressed between dies, dried, oiled, dried, &c., &c.

[Printed, 5*d*. See Repertory of Arts, vol. 14 (*second series*), p. 297.]

A.D. 1805, April 25.—N° 2840.

BRAMAH, JOSEPH.—"Sundry improvements in the art of "making paper."

First.—An "application of machinery," by which "sheets of "much larger dimensions can easily be made" "than can possibly "be done by hand in the usual way." The apparatus and mode of acting is fully described. It consists of a reservoir containing the pulp, which feeds the pulp into a vat, which has a frame capable of "being lowered or lifted up by a handle or winch "externally applied." The paper mould rests upon this frame, and is "lifted up or depressed in a perfect horizontal position when "the frame is lowered or raised," as may be necessary.

Second.—"Making paper in endless sheets;" and this is to be accomplished by a broad wheel resembling a water-wheel, having edges to prevent the lateral discharge of the fluid passing over the wheel, but otherwise covered with wire to allow the water to run from stuff which is fed in from a cistern above the wheel. Opposite the feeding point is placed a roller, covered with felt, called "the "couching roller, because it takes the paper from the mould as "they reciprocally turn." "There are likewise two other rollers, "also covered with felt or woollen cloth, which are placed in "firmer contact with each other, and between which the sheet is "conducted from the couching roller."

Third.—Doing away with the necessity of employing numbers of presses for the dry work, by using a press constructed on patentee's "patent hydro-mechanical principle." After passing through the press the package is put into "retainers." These consist of a top and bottom bed united by iron bars, the top bar being moveable, and capable of being fixed higher or lower with keys.

Fourth.—" Instead of using those cumbersome & unwieldy appa-" ratus" "denominated tribbles for the purpose of preparing the " lines at various heights to hang the paper on," "rails or wires are " made in a manner to represent so many frames or clothes-horses," and fitted into grooves in upright posts, are slid "up and down " by means of lines or pullies," "just like sash windows;" and they may be arranged in such a manner that in pulling down one you elevate the other, and the reverse, "just like sashes double hung."

[Printed, 4*d*. See Repertory of Arts, vol. 8 (*second series*), p. 1.]

A.D. 1806, July 21.—N° 2951.

FOURDRINIER, Henry.—" The method of making a machine " for manufacturing paper of an indefinite length, laid and wove " with separated moulds."

And first.—A number of moulds, of the description called laid or wove, are hooked or fastened together to form one long mould.

Second.—A platform to hold the said moulds in such a manner that the moulds shall slide along backwards or forwards, but in no other direction.

Third.—A vessel or trough from which the paper stuff or material is caused to flow upon the moulos through holes, each provided with one or more registers to limit or mark the flow of stuff.

Fourth.—A set of cylinders, upon which is passed, in the manner of a jack towel, an endless web of felting. There is a third cylinder in contact with one of these cylinders, and this third cylinder " communicates by means of another web of felt with an additional " pair of pressing cylinders." When the moulds arrive at the first cylinder, the felt web takes off the paper and conveys it to the first pair of pressing cylinders, whence it proceeds to the second pair, and "afterwards to any fit place of reception," so that continuing the process, paper of any length may be made, "& " with separate moulds."

[Printed, 4*d*. See Repertory of Arts, vol. 10 (*second series*), p. 327; Rolls Chapel Reports (seventh), p. 195.]

A.D. 1807, August 14.—N° 3068*.

FOURDRINIER, Henry, **FOURDRINIER**, Sealy, and **GAMBLE**, John.—An Act of Parliament was obtained "for pro-" longing the term of certain Letters Patent assigned to Henr

" Fourdrinier and Sealy Fourdrinier for the invention of making " paper by means of machinery," and the machine described by John Gamble in the Specification of his Patents, N° 2487 and N° 2708, with any other improvements added to it, is described fully by diagrams; but besides that, there is a minute description of a machine for cutting or subdividing the long sheets made by the machine into others or smaller ones. The paper is spread on the cutting table described over the edges of some steel plates, likewise fully described; a carriage, which has three cutting wheels, is pushed from one side of the table to the other by two workmen; the paper is adjusted over the edges of the steel plates each time before pushing the machine.

[Printed, 2*s.*]

A.D. 1807, November 12.—N° 3080.

DICKINSON, JOHN.—The title of this invention is "A cannon " cartridge paper manufactured on an improved principle," by mixing in certain proportion wool or woollen rags to the linen rags or other material, by means of which "when the paper is " lighted by the explosion of the powder in the gun, it is pre- " vented from retaining sparks of fire after the flame goes out." The linen and woollen materials should be made into half stuff in separate engines. The paper should be "engine sized" with alum solution only, and of a given strength.

[Printed, 2½*d.* See Repertory of Arts, vol. 14 (*second series*), p. 83; Rolls Chapel Reports (seventh), p. 105.]

A.D. 1807, December 4.—N° 3084.

COBB, THOMAS, Jun.—"Certain improvements in the art of " making paper in separate sheets."

The stuff or pulp passes from a larger vat into a smaller one on a lower level; from this smaller vat it flows into a small trough, where its motion is checked by an incline, from which the "stuff flows over another inclined surface to a paper mould;" this paper mould rests upon an endless web or girting or chains, and moves onwards, and moulds are placed in succession by a workman upon the said web, &c.

Couching and pressing are said to be facilitated by employing a certain arrangement of rollers with an endless web of felt, and *another mode of couching* and pressing is given, different from the last, and which may be used with the first part of this invention by a roller and an endless web, or a set of straps or chains or rollers, all of which methods are described by diagrams.

[Printed, 6d. New Repertory of Arts, vol. 15 (*second series*), p. 330; Rolls Chapel Reports (seventh), p. 201.]

A.D. 1809, January 19.—Nº 3191.

DICKINSON, John. The title of this invention is "Certain "improvements on my former patent machinery for cutting & "placing paper, & also certain machinery for the manufacture "of paper by a new method," and diagrams are given and described of the improvements in the machinery for cutting and placing paper. The machinery for the manufacture of paper is detailed in diagrams, which are fully described, and consists of a perforated brass hollow cylinder, having its surface particularly constructed, and "covered with an endless web of woven wire, "drawn tight over it." This cylinder is made to emerge from a trough covered with pulp, but the pulp is so moist, and on that account could not be pressed. To get rid of the superfluous water there is constructed in the inside of the cylinder a trough arranged so as to communicate with a pipe, and "this "pipe is connected with a pair of double-acting pumps, placed "in a cistern of water, so that" the pumps put in motion the air is drawn out of the cylinder, and the pulp is thereby pressed by atmospheric pressure. Other rollers are made to wind the paper from this cylinder.

[Printed, 1s. 6d. New Repertory of Arts, vol. 16 (*second series*), p. 1; Rolls Chapel Reports (seventh), p. 108.]

A.D. 1811, May 21. Nº 3452.

DICKINSON, John. The title of this invention is "Certain "improvements in my patent machinery for making, cutting, "and placing paper," and although the title is for cutting and placing as well as for making paper, the invention is entirely upon the making of paper. The improvements consist of as follows:

First, a more easy method of constructing the cylinder than the one detailed in the Specification of Patent, Nº 3191.

Second, relates to the passage of water through and out of the cylinder.

Third, relates to the construction of the back or vessel intended to contain the pulp for the supply of the cylinder.

Fourth, relates to the couching or taking the paper off the cylinder, and, among others, substituting for a brass roller "a roller " covered with several folds of woollen cloth, or constructed so " that the surface is moderately soft or elastic."

Fifth, the "application of a well-known method of using an " endless felt;" and it is "necessary to use a second endless felt " in order to prevent the paper sticking to the top roller."

Sixth, relates to the method of feeding and regulating the supply of stuff through the feed pipes, &c.

Seventh, making "paper having two or more different colours " in the same sheet," and "for this purpose the back must be " partitioned off, according to the description of paper it is re- " quired to make." "The partitions must be required to divide " the back into two or more parts."

All these inventions are illustrated by diagrams, which are fully described.

[Printed, 10*d.*] See Repertory of Arts, vol. 32 (*second series*), p. 1; Rolls Chapel Reports (eighth), p. 87.]

A.D. 1812, June 2.—N° 3568.

DIDOT, Leger.—The title of this invention is "Certain other " improvements upon the said machines for making both wove & " laid paper."

The said machines referred to by the patentee are described in the Specifications of Patents, N° 2487, N° 2708, N° 3068*, N° 2951. The improvements are described by diagrams, and the effect to be performed may be thus described :—"The vat is sup- " plied with paper stuff in a fit state to be manufactured," suspended by an agitator, and "delivered to the successive receptacles, " where it is deprived of eddy or irregular motion, delivered to the " moulds, which have their deckles raised;" the moulds then move along the agitated frame, deposit their water in a trough beneath, "which also conveys away the superfluous paper stuff, " and the moulds proceed along to the platform of the air pump," constantly at work, and deposit more water. "The moulds suc- " cessively arrive at the couching cylinder, & give off their paper, " which is carried by webs to the pressing cylinders & taken off " The felts are constantly washed & brushed clean, and the " moulds washed clean between every successive charge they " receive."

[*Printed, 1s. 0d. See Rolls* Chapel Reports (eighth), p. 90.]

A.D. 1812, July 16.—Nº 3580.

COBB, THOMAS, Jun.—"Certain further improvements in the "art of making paper in separate sheets;" and it is stated that the said further improvements "do in a great measure bear relation to "the former improvements," for which Patent, Nº 3084, was granted to the inventor. These improvements are illustrated by diagrams, which are described, and among these is an arrangement by which the paper stuff is kept at a permanent level in the second vat; from this vat the stuff is made to flow in a particular manner into shallow cisterns, and down an incline to the moulds, arrangements being made for breaking all bubbles; and as the patentee has found "that a side shake or agitation is as effectual or prefer"able to a shake endwise," arrangements are made to effect this; and instead of a roller being employed to tilt the moulds, a platform is arranged to do this, and lodge the mould upon the lower carrying belt, which conveys it back to be placed by a workman on the rails, to be carried forward for a fresh supply of stuff. Arrangements are made to wash the moulds "previous to receiving a fresh supply "of stuff." Instead of using a sliding deckle to the moulds, deckles are put "on each side of the moulds of sufficient height to "prevent the stuff from running over." These are described, and one is shown of a T shape, which will serve for two moulds.

The couching roller is covered "with several rounds of thick "cloth," or it is stuffed evenly "with horsehair or other elastic "material."

A method is described for "replacing the moulds by the machine, "instead of doing the same by hand."

[Printed, 1*s*. 2*d*. See Rolls Chapel Reports (eighth), p. 92.]

A.D. 1812, June 2.—Nº 3598.

DIDOT, LEGER.—The title of this invention is "Certain im"provements in moulds for making paper," and "the said im"provements are made in the moulds for making the paper called "laid paper" as follows:—

"Instead of fixing" or fashioning in any way "the wires of and "in the said moulds unto or upon the bars as is commonly done," "in consequence of which the paper is disposed to become heavy "on the bar, or thicker near the bar than elsewhere, a set of wires are fixed "unto or upon the said bars or immediate sup"ports," "further assunder from each other, or more open than

" would be required to make paper," " and two or more strait " wires " are fixed upon the said " last-mentioned set of wires," intermediate between and parallel to each of the said bars or supports, " and serving as the direct supports to another upper set of " wires, fabricated and put together in the common way."

[Printed, 3*d*. See Rolls Chapel Reports (eighth), p. 90.]

A.D. 1814, August 24.—N° 3839.

DICKINSON, John, and DICKINSON, George.—The title of this invention is " Certain improvements in the said John Dickin- " son's patent machinery for manufacturing paper, & also certain " apparatus for separating the knots & lumps from paper or paper " stuff."

The improvements in the machinery described in N° 3191 consist, first, "in a method of regulating the passage of the water " through the cylinder," by fixing rings in manner described, so that "it cannot run through too fast when the uncovered part of " the cylinder first enters the pulp."

Second, removing the air trough from the cylinder, and in lieu of it to suck the air from the inside of the cylinder itself by means of a pipe.

Third, applying condensed air to force the paper off the cylinder at the point where the couching takes place, and this is effected by means of a small trough arranged in the cylinder.

Fourth, washing the cylinder while at work in making paper by a pipe fixed over the cylinder, with other arrangements. These improvements are all fully described by diagrams.

The apparatus for picking paper is illustrated by diagrams, which are described, and consists of a frame supporting a wheel on which the paper is reeled as it comes from the machine; the paper from this is led over a small wheel covered with felt, having a fast motion in the same direction as the paper; the paper is next led over a straight edge, and afterwards over cushions, which are wood covered with felt or cloth; above are two rollers, with bars of sheet iron, which brush the paper; and beyond either of these arrangements is an "octagonal reel for reeling the paper upon, which is " preferred on account of the angles being obtuse, so that it " draws the paper nearly in an uniform direction over the " cushions."

[Printed, 7*d*. See Repertory of Arts, vol. 33 (*second series*), p. 1; Rolls *Chapel Reports* (eighth), p. 100.]

A.D. 1816, February 3.—N° 3979.

BUGDEN, John.—The title of this invention is "A process for "reducing rags or articles composed of silk, linen, or cotton, after "they have been used, and bringing them into their original state, "and rendering the material of which they were composed fit to "be manufactured & again applied to beneficial & useful pur-"poses;" and this is to be effected by passing the rags, &c. through a machine called a brake, known in the woollen trade by the name of a devil, till sufficiently separated, when the result is carded in a carding machine in the usual manner, after which it may be "manufactured & again applied to useful & beneficial "purposes." No useful or beneficial purpose to which this manufacture may be applicable is specified.

[Printed, 3*d*. See Repertory of Arts, vol. 30 (*second series*), p. 21.]

A.D. 1816, March 23.—N° 4002.

CAMERON, Robert, Jun.—The title of this invention is "A "machine for manufacturing paper."

The machine is illustrated by diagrams, which are described. Its mode of operating is as follows:—The pulp being prepared in the ordinary manner, is conveyed to a reservoir and kept constantly moved by agitators, is conveyed into a chest and mixed with water to answer the description of paper to be made, from this it flows on through certain arrangements into the moulds; the moulds are made to shake by means of a pin, this "separates "the water from the pulp;" on the moulds ceasing to shake they assume an inclined position, and pass on to the couching apparatus, and are made to deliver the paper. There are arrangements for washing the moulds. Any pulp which falls between the moulds when they are being filled is conveyed by an archimedes screw to the preparing chest.

[Printed, 10*d*.]

A.D. 1817, May 22.—N° 4126.

DIDOT, Leger.—The title of this invention is "Certain improve-"ments upon the machines already invented & in use for "making wove & laid paper in continued lengths or separate "sheets," and not only are the improvements described by diagrams and otherwise, "but also such parts as are common in other "machines," and the improvements are said to consist of as follows:—

First, employing the same machine to make paper, in sheets of a definite or indefinite length, "upon the same moulds, & also " sheets of an indefinite length upon an endless revolving wire " web."

Second, spreading or extending the pulp over the surface or surfaces of the moulds by "a new method of raising or lowering the " troughs & endless chain wheels."

Third, applying the "deokles" now in use for making paper by machines "where the endless wire web only is employed to the " making of paper upon moulds."

Fourth, a new mode of lengthening or shortening the endless chains which carry the moulds, "so as to adapt the chains to the " different sizes of the moulds."

Fifth, a mode of connecting the moulds to the endless chains by carriage bars, and also by screwed clamps.

Sixth, using top and bottom guide bars, between which the moulds are conducted by means of grooved wheels, &c.

Seventh, "the method of raising and lowering the deckles and " all the parts of the machinery which drive the deckles."

Eighth, the application of the couching roller to take the paper off the revolving wire web, and for raising and lowering the couching roller "so that it may be employed at pleasure to take " the paper either from the moulds or from the revolving endless " web."

Ninth, the knife or knives "for separating the pulp into sheets, " and the bars by which the said knives are elevated."

It is stated that no exclusive privilege "for any parts of certain " machines for making paper," and which are contained in the Specifications of Patents N° 2487, 2708, 3068*, 2951, 3568, &c., is claimed.

[Printed, 3s. 8d. See Thompson's Annals of Philosophy, vol. 11, p. 75; Rolls Chapel Reports (eighth), p. 119.]

A.D. 1817, June 3.—N° 4131.

TIGERE, Gabriel.—Manufacturing writing paper so "that it " would be extremely difficult, if not impossible, afterwards to ex" tract or discharge any writing from such paper, by immersing " the pulp previous to its being made into paper in a solution of " prussiate of potash of a given strength," after which it is made into paper, and sized and finished in the usual manner; or paper in *the water-leaf, after drying,* and previous to sizing, may be immersed in a similar solution, and when saturated, dried, sized, &c. in the usual manner.

[Printed, 8*d.* See Repertory of Arts, vol. 32 (*second series*), p. 190; Rolls Chapel Reports (eighth), p. 119.]

A.D. 1817, August 5.—N° 4152.

DICKINSON, John.—" Manufacturing by means of machinery, " paper for copper-plate printing, also papers for writing, drawing, letter-press printing, & of a thicker sort for boards, similar " in texture & substance to cardboards or pasteboards; & of " certain improvements in my patent machinery for manufacturing " & cutting paper."

First, " consists of a process similar to veneering in cabinet-" makers' work." It may be described as follows:—A reel full of thin moist paper suspended over a machine making thicker paper. The end of the thin paper is laid upon the thick paper from the machine, and conducted with it to the press rolls, which unite them as one body.

Second, sizing paper. Hitherto this has been done after the paper has peen cut into sheets; now it is proposed to do this after pressing the paper, by passing it through two size rollers, after which it is reeled. The lower part of the size rollers dip into a trough containing the size or gelatine.

Third, making a thicker sort of paper, similar to pasteboards or cardboards, " by drawing off two or more reels or lengths of paper " together," afterwards drying, sizing strongly, and pressing.

First.—Improvement in his patent machinery for manufacturing paper consists in the addition of a second felt and second pair of press rolls for pressing the paper before reeling it.

Second improvement.—An alteration in the internal apparatus of the paper-making cylinder, for the purpose of regulating the flow of the water through it.

Third.—Improvements in the cutting machine, which render it more efficacious, and also applicable to " cutting into smaller pieces, " of the size of cards, the thick paper similar to cardboards," &c.

The whole of the apparatus is fully described by diagrams.

[Printed, 2*s.* 4*d.*]

A.D. 1817, August 9.—N° 4157.

BALL, Edmund Richard.—" Manufacturing paper of superior " strength and durability for bills or notes or other uses requiring

" strength," by using in certain proportions "new floss silk, new flax, " hemp, or tow, Russian duck & Irish linens, in the composition of " the paper. These materials differing in their natures, take more or less time to reduce into pulp, after which they are made into paper in the usual way by means of wire moulds, &c.

[Printed, 3*d*. See Repertory of Arts, vol. 32 (*second series*), p. 129; Rolls Chapel Reports (eighth), p. 118.]

A.D. 1819, December 4.—N° 4419.

CONGREVE, Sir WILLIAM.—The title of this invention is " Certain improvements in the manufacture of paper for the pre- " vention of forgery," by giving to the paper in its manufacture " distinguishing marks or peculiarities," and, first, " texture, " smoothness, and thinness," with strength, and with a peculiar water-mark is said to be requisite, and how these are to be acquired is described.

" The tests of the genuineness of the white bank-note paper are " extremely delicate," but "are not so decided" as others which are described, namely, introducing a "coloured layer of pulp in " combination with white layers," and this is effected by making pulp, dyeing it with mineral and in some cases vegetable dye, or " Adrianople red cloth forms a most excellent coloured pulp;" and a paper is made of layers of the coloured and uncoloured pulp by dipping and couching, either alternately or otherwise, in the uncoloured and coloured pulp, attention being paid to the water-marking.

Another mode of marking paper may be given by printing upon it after the first layer is couched, and covering it with an outer layer of very fine pulp, either plain or water-marked.

[Printed, 4*d*. See Repertory of Arts, vol. 44 (*second series*), p. 198; London Journal (*Newton's*), vol. 1, p. 243; Mechanics' Magazine, vol. 6, p. 508.]

A.D. 1820, November 1.—N° 4509.

CROMPTON, THOMAS BONSOR.—" Drying and finishing of " paper by certain means hitherto unused for that purpose;" and this is effected by conducting, in manner described, the paper by means of cloth or cloths against heated cylinders, which cloth may be of any suitable material, but preference is given to a cloth of linen warp and woollen weft.

Attached to this machine is a cutter or shears to cut the paper off in suitable lengths as it comes from the rollers.

[Printed, 5*d*. See London Journal (*Newton's*), vol. 2, p. 253; Webster's *Reports*, vol. 1, p. 83; Webster's Patent Law, pp. 47 and 87; (also p. 132, *case 87*); *Carpmael's* Reports on Patent Cases, vol. 1, pp. 458 and 460.]

A.D. 1824, May 20.—N° 4959.

DICKINSON, John.—" Cutting cards by means of machinery, also " a process for applying paste or other adhesive matter to paper, & " for sticking paper together with paste or other adhesive matter, " by means of machinery applicable to such purposes respec- " tively."

First.—Cutting cards by circular cutters, the machinery of which is fully described.

Second.—Pasting machinery, by which the ends of the paper are conducted under and through two press rollers, underneath which are troughs of paste in which these rollers revolve; over these rollers brushes are also arranged, " which are intended for pasting " the under side of the paper as it leads under the two press " rolls."

Both the cutting and pasting apparatus are described by diagrams.

[Printed, 10*d*. See London Journal (*Newton's*), vol. 10, p. 354.]

A.D. 1824, July 27.—N° 4989.

NESBITT, Alexander (*a communication from William Van Houton the younger*). The title of this invention is " A process by " which certain materials may be manufactured into paper or felt, " or a substance nearly resembling coarse paper or felt, which " material so prepared is applicable to various useful purposes;" and the " certain materials " consist of moss, " which does not rot," but " preserves wood from decaying and rotting." This moss grows in the low watering places of Holland, and if not found in England, might be imported from Holland. The moss after cleaning is chopped up, soaked, and put into a paper frame, placed between woollen cloth, and pressed and dried and brought again into a press, it is completely fabricated, and fit for different useful purposes; for instance, in ship building it is laid between " the " woods, and in the Dutch navy the ships are coated with it under " the copper, and it is found to be of an invaluable effect."

[Printed, 8*d*. See Repertory of Arts, vol. 1 (*third series*), p. 435; London Journal (*Newton's*), vol. 10, p. 360; Register of Arts and Sciences, vol. 8, *p. 174*; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 259.]

A.D. 1824, November 23.—N° 5041.

LAMBERT, Louis.—"Certain improvements in the material and "manufacture of paper," by employing straw "free from knots, by "cutting off the stems," boiling it with a certain proportion of quicklime, but potash, soda, or ammonia may be substituted for the lime. After washing, it is exposed "to the action of hydro-"sulphurs" for so many hours, which are said to "free it from the "mucilagenous and silicious matter so prejudicial in paper "making," after which it is bleached, torn up by the rag engines, and made into paper.

The alkaline sulphuret, to the action of which the straw is submitted, is composed of lime and sulphur in solution in certain proportions.

[Printed, 3*d*. See Repertory of Arts, vol. 1 (*third series*), p. 309; London Journal (*Newton's*), vol. 10, p. 127; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 258.]

A.D. 1825, January 1.—N° 5064.

DENISON, Samuel, and HARRIS, John.—The title of this invention is "Certain improvements in machinery for the purpose of "making wove and laid paper;" and these improvements consist principally in the general arrangement and combination of parts of machinery for the purpose of making wove or laid paper, and likewise in making the main drum or cylinder in manner described and illustrated by diagrams. It may be generally described as a number of rings keyed together, covered with copper bars, having small ribs projecting, with other arrangements.

[Printed, 10*d*. See Repertory of Arts, vol. 1 (*third series*), p. 109; London Journal (*Newton's*), vol. 12, p. 137; Register of Arts and Sciences, vol. 4, p. 258; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 246.]

A.D. 1825, January 11.—N° 5075.

PHIPPS, John, and PHIPPS, Christopher.—"An improvement "or improvements in machinery for making paper;" and they may be stated generally to be in employing a roller the cylindrical part of which is formed of laid wire in the manner described by diagrams and otherwise. "The effect produced by the said cylindrical "roller is that of making an impression upon the sheet of paper "or pulp upon which the said roller presses, & thus the paper "so made has the appearance of laid paper."

[Printed, 1*s*. 1*d*. See Repertory of Arts, vol. 3 (*third series*), p. 413; London Journal (*Newton's*), vol. 12, p. 353; Register of Arts and Sciences, vol. 2 (*new series*), p. 38; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 248.]

A.D. 1825, November 17.—Nº 5293.

GUESTIAR, James.—"An invention of a mode or modes of "making paper from certain substances, which are thereby appli- "cable to that purpose."

[No Specification enrolled.]

A.D. 1825, November 24.—Nº 5296.

DE LA GARDE, Augustus Count.—"Certain improved ma- "chinery for breaking or preparing hemp, flax, & other fibrous "materials, which I denominate 'the rural mechanical brake,'" and among the other fibrous materials, nettles and hops are named. The fibres are prepared without "employing any chemical process, "any wash, not the least steeping in water or any liquid." "The "break" is an arrangement of beaters, stamps, teeth, brushes, &c., which serve to shake out the grains, break up the fibre, free it from gum, &c.

[Printed, 10*d.* See London Journal (*Newton's*), vol. 14, p. 101.]

A.D. 1826, July 4.—Nº 5380.

AUBREY, Lewis.—"An improvement or improvements in the "web or wire for making paper;" and this may be generally stated to be making the warp of small wires "without the large "warp being applied until the small spaces in the reed are filled "agreeably to the width wanted," with other arrangements described. The warp is made "so as to produce transversedly the "large water-mark lines common in laid paper."

[Printed, 8*d.* See Repertory of Arts, vol. 3 (*third series*), p. 321; London Journal (*Newton's*), vol. 14, p. 180; Register of Arts and Sciences, vol. 2 (*new series*), p. 55; Engineers and Mechanics' Encyclopædia, vol. 2, p. 247.]

A.D. 1827, February 20.—Nº 5469.

DE LA GARDE, Augustus Count.—"A method of making "paper of various descriptions from the bullen or ligneous parts "produced from certain textile plants in the processes of pre- "paring the same textile plants by the rural mechanical brake;" and this method consists of employing "the ligneous parts of the "stalks of hemp or flax, nettles, hops, or such other textile plants "as will yeild fibres or filaments proper for spinning, into cords "or threads" (without previous rotting) "by means of a machine "called the rural mechanical brake," described in Patent Nº *5296.* *The result is* "the ligneous parts are separated from the

" filamentous parts" by the operation, and are called "bullen, " which is a substance capable of being made into paper" by steeping for a given time, mashing in a mortar, or otherwise fermenting with bran, bleaching with " water impregnated with oxi- " muriate of lime" in a vessel described; after this it is ground to a pulp in the engine "with white linen rags previously ground;" this does away with the "semi-transparency of the paper when " dried;" but this may be prevented by mixing the pulp with a given quantity " of the substance called in France Thianean chalk " or Montereau chalk, reduced to an impalpable powder." In " making brown paper from such bullen the process is the same," but the "bleaching operation is omitted."

[Printed, 4*d*. See London Journal (*Newton's*), vol. 1 (*second series*), p. 354.]

A.D. 1827, August 21.—N° 5545.

DE SORAS, Gabriel, WISE, Stacey, and WISE, Charles.—Using a size resulting from a combination of bees'-wax, caustic, alkaline ley, alum, and potato flour or starch, by which " the " materials employed in the manufacture of paper," &c., are " sized, glazed, or beautified" in the progress of manufacture.

[Printed, 4*d*. See London Journal (*Newton's*), vol. 3 (*second series*), p. 317; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 254; Register of Arts and Sciences, vol. 2 (*new series*), p. 34.]

A.D. 1828, February 21.—N° 5617.

DICKINSON, George.—" An improvement or improvements " in making paper by machinery," which consists of giving a shaking motion alternately upwards and downwards to the endless web or woven wire at that part which first receives the liquid pulp, and being suitably pressed by rollers; it is detached and transferred to an endless felt, to be again pressed by rollers. All these arrangements are described by diagrams.

[Printed, 1*s*. 3*d*. See London Journal (*Newton's*), vol. 9 (*second series*), p. 99; Register of Arts and Sciences, vol. 2 (*new series*), p. 322; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 248.]

A.D. 1828, May 6.—N° 5647.

PALMER, James.—" Certain improvements in the moulds, ma- " chinery, or apparatus for making paper;" and these consist, first, in wire rolls to assist in forwarding the manufacture of paper by *pressing out part* of the water before the pulp passes under the *wet press cylinders.*

Second, making paper machine wire of a more durable texture than heretofore by linking together in a certain manner by wire. strips of brass, copper, or other metal pierced with holes; also constructing "laid moulds for making lined or ruled paper."

These operations are described by diagrams.

[Printed, 9*d*. See London Journal (*Newton's*), vol. 2 (*second series*), p. 279.]

A.D. 1829, January 14.—N° 5754.

DICKINSON, JOHN.—The title of this invention is "A new "improvement in the method of manufacturing paper by ma"chinery, and also a new method of cutting paper and other "material into single sheets or pieces by means of machinery;" and, first, pressing out the water in the process of manufacturing pulp into paper by conducting it "from the surface of the woven wire in "which the paper is formed" by means of an endless felt between press rolls, where it receives "one or more pressures," and giving the latter of these pressures with the paper reversed, so that both sides of the paper are glazed alike.

Second.—"Introducing into paper, cotton, flaxen or silken "thread, web, lace, or other material," so that the said substance "may constitute the internal part of the paper;" and a process is described which it is said "was invented some years ago," and improvements in the manufacture are detailed. The material to be introduced is wound on a reel, and led from this, is drawn over one or other of some grooves cut in the periphery of a roller fixed horizontally and parallel with the cylinder on which the paper is made, and the machine being in motion, the roller may be turned round with the hand, the material will descend into the pulp, and the cylinder being in motion, and forming paper upon it, the flow of the pulp will carry the ends of the material into contact with it, and they will be attached to its surface sufficiently to carry them round with it. When that part of the paper in which the threads are incorporated is led away by the endless felt, the "grooved "roller will be turned round, & the bobbins unwound by the pull "of the threads led away with the paper."

Third.—Improvements in cutting paper are fully described, and consist of a "swinging frame with circular cutters on a spindle at "the bottom of it, acting against fixed straight cutters," by which means several sheets can be cut at once from a web of paper.

[Printed, 1*s*. 1*d*. See Repertory of Arts, vol. 8 (*third series*), p. 594; London Journal (*Newton's*), vol. 9 (*second series*), p. 149; Register of Arts *and Sciences, vol.* 4 (*new series*), p. 9; Engineers' and Mechanics' Encyclopædia, *vol.* 2, p. 250.]

A.D. 1830, April 28.—N° 5934.

WILKS, JOHN.—" An improvement or improvements in a part " or parts of the apparatus for making paper by machinery;" and this consists in the "application of a hollow cylinder or " roller of a peculiar construction, in conjunction with other machinery now in common use." The hollow cylinder preferred is made by drawing out a copper tube on what are termed tribletts, turning a number of grooves in the surface throughout its length, " the bottom of each groove being parallel with the axis of the " tube, and the sides of the said grooves at right angles with the " said axis." The tube drawn from the triblett is cut open, annealed, and brought to a flat sheet, and again made into a tube, the grooved side of the copper inwards, put upon a triblett, and grooves cut in a transverse direction, " the grooves will cross each " other at right angles, or nearly so," forming holes.

[Printed, 1*s.* 11*d.* See London Journal (*Newton's*), vol. 7 (*second series*), p. 249; Register of Arts and Sciences, vol. 5 (*new series*), p. 199; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 251.]

A.D. 1830, July 29.—N° 5964.

IBOTSON, RICHARD.—" Improvement or improvements in the " method or apparatus for separating the knots from paper stuff " or pulp used in the manufacture of paper;" and these consist in making the bottom of a sieve or strainer of a number of bars, having parallel spaces between every two of the bars which are adjoining to each other, and "making the width of each bar to " equal or exceed the length of the fibres composing the paper " stuff or pulp to be strained;" also making the bottom of the said sieve or strainer from one or more sheets of metal, by cutting slits through them, the slits to answer for the spaces before described; also applying such sieves or strainers for "separating " the knots from the stuff or pulp of which the paper is made."

[Printed, 5*d.* See London Journal (*Newton's*), vol. 7 (*second series*), p. 225; Mechanics' Magazine, vol. 15, p. 348; Register of Arts and Sciences, vol. 5 (*new series*), p. 226; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 252.]

A.D. 1830, August 18.—N° 5983.

TWOGOOD, MATTHEW, and SMITH, LEAPIDGE.—The title of this invention is "A new mode of applying size to paper;" and this is effected by passing the paper between two or more revolving pressing rollers, the surface of one or more of which rollers has been "previously covered with a continuous film of liquid size," by certain methods described by diagrams.

[Printed, 1*s.* 1*d.* See Repertory of Arts, vol. 11 (*third series*), pp. 207, 249; London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 294; Mechanics' Magazine, vol. 15, p. 206; Register of Arts and Sciences, vol. 6 (*new series*), p. 7; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 256.]

A.D. 1830, August 31.—N° 5987.

BARRATT, THOMAS.—" Combining certain parts of machinery," so as to produce " writing paper similar to that which has been " made by hand;" and, first, suspending the machinery in certain manner described, and producing a tremulous and vibratory motion for blending the stuff, by means of excentrics.

Second.—Applying rollers of a smaller diameter than one inch, which causes a greater surface to come in contact with the endless wire web, and thus conducts " off the water more quickly."

Third.—Placing bars or wires between such small rollers for a similar purpose as in the above.

Fourth.—" Forming names and devices in endless webs of wire, " for the purpose of making water-marks on lengths of paper " made by machinery."

Fifth.—Applying in manner described additional deckles for making two or more widths of paper side by side.

Sixth.—A reel is described and claimed, which contracts at each revolution sufficient to allow for the thickness of paper wound round it, and by which application the great waste " experienced in " cutting the paper on the old reels will be avoided."

[Printed, 1*s.* 1*d.* See London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 283.]

A.D. 1830, October 6.—N° 6008.

DICKINSON, JOHN.—" An improved method of manufacturing " paper by means of machinery," which consists in bringing the paper first formed into contact with the paper formed on another cylinder, and " previous to its being detached from the felt which " it is first made to adhere to, so that being in a very wet state the " two layers of paper unite better than if either of them had been " first pressed and detached from the felt."

[Printed, 6*d.* See Repertory of Arts, vol. 11 (*third series*), p. 278; London Journal (*Newton's*), vol. 1 (conjoined series), p. 400; Register of Arts and Sciences, vol. 6 (*new series*), p. 38; Engineers' and Mechanics' *Encyclopædia*, vol. 2, p. 251.]

A.D. 1830, November 9.—Nº 6033.

HALL, John, Jun.—"A machine upon a new and improved "construction for the manufacture of paper," and a machine is described by diagrams in many respects resembling the ordinary machine in use, but it is stated that no claim is laid to such parts as the invention; but the combination of such parts, together with those which cause the pulp to collect on the periphery of a cylinder, "constitute a machine upon a new and improved construction." It is by hydrostatic pressure, produced by the difference of level of the pulp in the vat and in the cylinder, together with a pump used for drawing off the water, which causes the pulp to collect on the periphery of the cylinder.

[Printed, 6*d.* See London Journal (*Newton's*), vol. 3 (*conjoined series*), p. 255; Register of Arts and Sciences, vol. 6 (*new series*), p. 84; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 251.]

A.D. 1831, March 21.—Nº 6095.

TURNER, George William.—"Constructing a sieve or sieves "as described for clearing the pulp prepared for making paper," from its knots, lumps, and other matters. These are adapted to paper-making machines, and a rotary as well as an up-and-down motion is given to them, either by the mechanism shown, or otherwise. The sieves preferred are usually constructed of a circular form, by "combining any desirable number of concentric rings of "metal smoothly formed, with small openings between them." These rings are mounted upon radial arms. Wire may be used instead of rings of metal, and the construction of the sieves may differ, as, for instance, "by affixing segment pieces to the frame or "arms," or "attaching straight bars or wires in poligonal angles."

[Printed, 11*d.* See London Journal (*Newton's*), vol. 8 (*second series*), p. 69; Register of Arts and Sciences, vol. 6 (*new series*), p. 228; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 253; Rolls Chapel Reports (seventh), p. 135.]

A.D. 1831, August 4.—Nº 6148.

HALL, John, Jun.—"An improvement in machinery used in "the manufacture of paper;" and this consists of a circular strainer to be used during the process of reducing rags into pulp for the purpose of manufacturing paper. The strainer is described by diagrams. It may be briefly stated to consist of two, three, or more rings of brass or copper, having a number of arms fixed on a wrought-iron spindle, so that the spindle shall pass immediately through the centre of the rings, "thereby forming the axis on "which the cylindrical strainer is to revolve." The rings are pierced with a number of holes to receive transverse bars, over this a woven wire is put, the "meshes or interstices" of which "should be of the "dimensions usually employed in the strainers of paper engines," &c. The mode of working this strainer is fully described.

[Printed, 6*d*. See Repertory of Arts, vol. 13 (*third series*), p. 202; London Journal (*Newton's*), vol. 11 (*conjoined series*), p. 40; Register of Arts and Sciences, vol. 7 (*new series*), p. 37.]

A.D. 1831, August 31.—N° 6156.

JEQUIER, Jean Jaques.—The title of this invention is "Certain improvements in the machinery for or method of making "paper," "which he denominates the xeranothlipte," and a machine is described having many parts which are in common use, and making paper with longitudinal large wire water-marks as has been done before; but machinery is described which deals with the paper after it leaves the endless wire cloth till it arrives at the reel, and which it is said is the invention; and these parts "are particularly "adapted to the couching & pressing lengths of paper made on an "endless wire cloth, having large wires lengthwise."

[Printed, 11*d*. See Repertory of Arts, vol. 13 (*third series*), p. 203, and vol. 16, p. 331; London Journal (*Newton's*), vol. 4 (*conjoined series*), p. 293; Register of Arts and Sciences, vol. 7 (*new series*), p. 77.]

A.D. 1831, October 6.—N° 6176.

YOUNG, Peter.—The title of this invention is "A new mode of "manufacturing mangle wurzel, for the purpose of producing "various known articles of commerce."

[No Specification enrolled. N.B.—Although no Specification was enrolled, a description of this invention is given in the London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 118, and said to have been enrolled in April 1832. It closely approximates with the abridgment of N° 6249.]

A.D. 1832, January 10.—N° 6209.

DICKINSON, John.—"Certain improvements in the manufac-"ture of paper;" and the first of these improvements "consists "in a process of purifying the pulp from knots, grit, and other "impurities, by causing it, in a dilute fluid state, to pass between "longitudinal apertures on the surface of a revolving cylinder, "*about the one* hundred & fifteenth part of an inch wide." The apparatus for this purpose is described by diagrams. The pulp passes through the wires on a cylinder, and flows out through the periphery of said cylinder into "troughs, through which it is conducted to the machine." The cylinder is constructed, like a squirrel cage, of circular hoops of an endless spiral wire attached to transverse bars; "a float particularly constructed is in the interior of the cylinder, which prevents the accumulation of pulp on the surface of the cylinder by agitation of the pulp in the interior, by "its rapid and constant up-and-down motion."

Second improvement relates to the transverse cutting of paper, and consists of forming the moveable knife with the cutting edge at an angle, so that the cutting is communicated "at both ends at the same time, and to be completed as soon as the middle part of the upper knife has passed the middle part of the lower one."

[Printed, 9*d.* See Repertory of Arts, vol. 14 (*third series*), p. 267; London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 402; Register of Arts and Sciences, vol. 7 (*new series*), p. 203; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 253.]

A.D. 1832, March 15.—N° 6243.

BREWER, HENRY.—First, "a peculiar construction of sieve or strainer, to intercept and arrest the knots, lumps, and other matters which may be mixed with the fine fibres of pulp prepared for making paper," by combining a series of round wires or rods which are placed side by side in parallel positions at distances apart, depending upon "the intended quality of the paper to be made."

Second, "the adaptation of such sieves, in combination with other apparatus, for manufacturing paper both by machinery and hand." Bridles are affixed to the sieves, extending across them, and small arms hang from the sides of the bridles, which are intended to slide up and down in grooves or sockets made in transverse pieces or stretchers, extending from the sides of the vat, and holding it firmly together. To the middle of each bridle a crank rod is attached by a joint, and the rod connected to a crank shaft, on giving to which a rotary motion "the sieves will be made to vibrate with a quick up-and-down movement."

The apparatus in each case is described by diagrams.

[Printed, 11*d.* See London Journal (*Newton's*), vol. 1 (*conjoined series*), *p. 338; Rolls Chapel Reports* (seventh), p. 139.]

A.D. 1832, March 22.—N° 6219.

YOUNG, Peter.—The title of this invention is, " A new mode of " manufacturing the root called mangel wurzel, for the purposes " of producing certain known articles of commerce."

First, " a liquor fit for the purposes of distillation into spirit;" second, " a liquor fit for the purposes of being made into vinegar;" third, " a pulp fit for the purpose of being made into paper."

The mangel wurzel after cleaning is rasped or grated, and pressed in cloths, and the juice collected affords by certain treatment the liquor for the distillation of spirit. The pulp in the press is treated with a certain amount of cold water, and again pressed affords the liquor for the purposes of being made into vinegar. The residuum from the second operation is washed with water, and afterwards washed in diluted sulphuric acid of a certain strength, removed to bleaching stoves, and treated with sulphurous acid gas and chlorine till bleached, or it may be bleached " by the liquid chlorides in vats," and washed forms a pulp, which with or without the pulp of white rags may be converted by the usual processes into white or coloured papers, or if bleaching is omitted the pulp may, with or without the addition of " old ropes, flax, or hemp, be converted by the usual " process into brown or coarse paper, strong pasteboard, or " papier machée."

[Printed, 8d. See Repertory of Arts, vol. 14 (third series), p. 275; Register of Arts and Sciences, vol. 7 (new series), p. [illegible].]

A.D. 1832, September 20.—N° 6312.

AMIES, Joseph.—" Certain improvements in the construction " of apparatus to be employed in making paper."

First, constructing the bottom of a strainer or sieve to be employed for arresting knots, lumps, &c., by substituting for metal bars or rods hitherto employed, " plates of brass or other suitable metal," having " short slits through " them, made in the manner described so as to afford stability to the bottom of the sieve or strainer. The vibration of a sieve constructed with bars or rods causes the bars or rods to become loose, and have openings " between which the " knots and lumps were allowed to escape."

Lastly, in adopting these strainers, " any other mechanical " contrivance capable of producing the required vibratory action," beyond " the lever action and tappet wheel may be employed if

" found more convenient; and these sieves are adapted to the " straining of paper pulp, either for the use of hand mould vats " or of paper-making machines."

[Printed, 9*d*. See London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 216; Rolls Chapel Reports (seventh), p. 140.]

A.D. 1833, January 9.—N° 6360.

GIBBS, Joseph.—" Certain improvements in the processes of " dressing or preparing hemp, flax, New Zealand flax, and other " vegetable fibrous substances, to render them fit for spinning, " paper making, and other purposes;" and a machine is described by diagrams by which these fibrous materials are continually rubbed between furrowed or channelled cast-iron plates by a backward and forward alternate movement of upper plates, and when the fibrous substances are sufficiently opened, they are by certain arrangements " gradually drawn forward between the furrowed and channelled " plates." The fibrous material so treated may " be finished in " any of the usual modes," and " the shortest of the fibres may " be used for paper making or other purposes with considerable " advantage."

[Printed, 6*d*. See London Journal (*Newton's*), vol. 6 (*conjoined series*), p. 9.]

A.D. 1833, January 11.—N° 6363.

HARROLD, William.—" An improvement or improvements in " machinery for making or manufacturing paper," which is the use of a " revolving wheel or pulp dresser, which carries the dresser " plates or strainers, causing them to strike against the pulp, and " allowing the dressed portions to pass through to the inside of the " wheel," from whence they pass away through an opening in one of the heads of the dresser.

[Printed, 5*d*. See London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 32.]

A.D. 1833, February 14.—N° 6387.

WILLIAMS, Thomas Robinson.—The title of this invention is "A new combination of fibrous materials, forming by means " of machinery artificial skins, which may be applied to the pur- " poses for which skins, leather, vellum, & parchment are now " used," and this was obtained by passing "the fibrous material, " whether silk, cotton, flax, hemp, wool, fur, or hair, alone or " *mixed, through a carding* machine, from thence it is blown by

" a fan, and drawn upon an endless revolving apron or band of " woven metallic wire or cloth, &c., having a partial exhaustion " of the air; it is passed through an adhesive composition, which " may by composed of glue, water, and flower in certain propor- " tions, afterwards it is dried," &c. Other modes of operating are given.

The Patent was assigned to Forbes McNeill, and a Disclaimer was allowed upon it, dated 27th day of April 1843, by which the title was altered to " Improvements in producing a combination of " fibrous materials in air, and drawing, depositing, and laying the " same on to woven or perforated surfaces, by a partial exhaustion " of the air under or on the opposite side of such surfaces, forming " by means of machinery a batt, sheet, or fleece of fibres." Other parts of the Specification are likewise altered so as to suit the present title.

[Printed, 1s. 2d. See Repertory of Arts, vol. 7 (*new series*), p. 243, also vol. 9 (*new series*), pp. 103 and 172; London Journal (*Newton's*), vol. 10 (*conjoined series*), p. 78; Rolls Chapel Reports (seventh), p. 143.]

A.D. 1833, May 25.—N° 6428.

MOLINEUX, Francis.—" Certain improvements in machinery " for making paper;" and these improvements relate to the apparatus called strainers for separating knots, lumps, &c. from pulp, and three particular and separate combinations or arrangements of machinery or apparatus are described by diagrams.

First, the combining of a series of rollers, " the surfaces of such " rollers moving in opposite directions to each other," and " thereby having a tendency to clear each other of knots, &c."

Second, an arrangement "whereby a trough is caused to move " backwards and forwards within another trough," " and having " plungers."

Third, the " application of small perforated holes in cylindrical " or other formed vessels, when such vessels have plungers," when " used for straining pulp for making paper."

[Printed, 10d. See London Journal (*Newton's*), vol. 14 (*conjoined series*), p. 247.]

A.D. 1833, June 20.—N° 6437.

WRIGLEY, Thomas.—" An improved pulp strainer," and which is described by diagrams.

It may be stated to consist of a piston within a box or vessel having perforated sides, and placed within a pulp vat, and so arranged that a larger quantity of pulp should pass into the receiving trough than can pass out by the delivery tubes, so that the superfluous quantity of pulp drawn in should be again driven out through the straining apertures, for the purpose of constantly freeing them from knots. But the exclusive use of any machine " which shall be so constructed as to bring into operation" the " principle of keeping free the strainer, by the forced reflux of a " portion of the pulp at intervals through the apertures of the " strainers," is claimed.

[Printed, 9*d.* See London Journal (*Newton's*), vol 10 (*conjoined seri* p. 333.]

A.D. 1833, September 28.—N° 6476.

DAVEY, Henry.—" Certain improvements in machinery or " apparatus for preparing linen and cotton rags, & other materials " used in the manufacture of paper."

These improvements may be described as " an arrangement of " certain mechanical parts" " well known as applied to other purposes," consisting of an endless feeding cloth, by which the rough rags are conducted to a pair of feeding rollers, after passing which, " the rags are submitted to the operation of rotary cutters, " acting against a fixed or ledger blade," after which they are delivered on to a horizontal sieve or sorting table, where they are examined, and if any pieces " happen to have escaped the cutters, " these pieces are returned into the machine to be again operated " upon, until they are" " in a state ready for the pulp engine." Additions might be made to this machine, such as beaters to strike off the dirt, and further a rotary fan or other blowing apparatus, whereby the lighter particles of the rags, &c., which might pass through the meshes of the sieve along with the dirt, might be separated.

[Printed, 10*d.* See London Journal (*Newton's*), vol. 4 (*conjoined series*), p. 178; Rolls Chapel Reports (seventh), p. 147.]

A.D. 1833, December 28.—N° 6535.

DICKINSON, George.—" An improvement or improvements " applicable to making of paper;" and the object is said to be to facilitate the making of laid paper.

First, substituting threads or yarns of silk, flax, cotton, or worsted (suitably combined by twisting or platting) for the fine wire hitherto employed to unite the stiff parallel wires, whereof endless webs are composed for the making of laid paper by machines, which operate by endless webs.

Second, applying such improvements to the inventor's machine described in Patent N° 5617, excepting that the roller or cylinder of such machine, around which the said endless web circulates, is to be formed with grooves around its circumference to admit of threads or yarns of silk, &c. being used, and the under side of the copper apron or spout which delivers the flow of pulp upon that web should be "formed with corresponding grooves."

Third, applying to such machines the method described and represented in the drawings, "in order to give an end-way shaking "motion to the web and to the pulp during its formation into laid "paper," instead of shaking laterally from side to side, as in Fourdrinier's machinery, or up and down, as in N° 5617. This motion is communicated by a moving frame, in which the web and its rollers are supported.

[Printed, 8d. See London Journal (Newton's), vol. 17 (conjoined series), p. 90.]

A.D. 1834, November 15.—N° 6713.

WRIGHT, Lemuel Wellman.—"Improvements in machinery "for making paper;" and these improvements are said to be six in number, as follows:—

First, "a peculiar mode of constructing the wirework of the "moulding cylinder of a machine for making lengths of paper."

Second, "in the arrangement of the parts of a paper-making "machine, in which the said peculiar construction of moulding "cylinder is adapted & made to operate."

Third, "an apparatus or mode of regulating the flow of water "through the moulding cylinder," by means of which the quantity of pulp may be determined, and "any required substance of paper "produced."

Fourth, constructing "a peculiar apparatus for drying paper as "it passes from the moulding cylinder and carding roller."

Fifth, "a mechanical contrivance for cutting the length of paper "into sheets as it passes from the drying apparatus."

Sixth, "a mode of making paper upon a revolving moulding "cylinder in separate sheets in connexion with a couching "cylinder, which is coated with wirecloth, and attached to an "exhausting apparatus, and drying those sheets as they pass from "the moulding cylinder."

These arrangements are described by diagrams, and the following will convey some idea of them:—The cylinder is constructed of a number of discs of brass with longitudinal wires or round bars of metal, and a continuous wire is bound tightly over this in the direction of a spiral; over this spiral is wirecloth, and over this wirecloth "fine vellum wirecloth;" one end of the cylinder is water-tight, the other end "open for the passage of water between the "arms," and by which, from the quantity of water flowing, the amount of pulp is determined.

The drying apparatus consists of a series of rollers arranged in such a manner as to lead the paper to the cutting apparatus, which is a flat table, upon which a cutter blade is made to fall upon the paper "as it passes the edge of the table which severs the sheet."

"To mould the paper into distinct sheets" the cylinder is divided by bands into spaces corresponding to the size of the sheets required, and the paper is couched by a cylinder constructed with openings in such a manner, that by exhaustion the sheets of paper are taken up from the moulding cylinder when they come opposite these openings.

[Printed, 2*s*. 1*d*. See London Journal (*Newton's*), vol. 8 (*conjoined series*), p. 86; Rolls Chapel Reports (seventh), p. 156.]

A.D. 1834, November 25.—N° 6725.

DONKIN, John.—"Certain improvements in the machinery for "making paper," and these consist in the application of two perforated hollow cylinders, of convenient length and diameter, made of metal or other fit material covered with a jacket of wove wire, and placed in a vat or vessel containing pulp, and made to revolve whilst in contact and parallel to each other, so that a sheet of paper shall be formed between them by a layer of pulp forming on each, and uniting "by being compressed between the said two "cylinders." The vat supplying the pulp may be partitioned into two, and having different qualities of pulp in each, the paper may have different faces.

The hollow perforated cylinders preferred to be used are described in the Specification of a Patent granted to John Wilks, N° 5934.

[Printed, 1*s*. 7*d*. See London Journal (*Newton's*), vol. 19 (*conjoined series*), p. 349.]

A.D. 1835, March 4.—N° 6782.

PRINCE, John.—The title of this invention is "An improved "mould and apparatus to be used in making paper."

The Specification of this Patent is said to be stolen.

A.D. 1835, July 24.—N° 6866.

DICKINSON, John, and TYERS, William Long.—"Certain "improvements in the manufacture of paper;" and these consist as follows:—

First, using "a series of magnets for the purpose of extricating "from the pulp of which paper is made particles of iron or steel," and which are said to be found "in certain materials now made "use of for the manufacture of paper." "The common horse-"shoe magnet is found most efficacious," and is applied in a manner described.

Second, arranging the fibres of the substance used for the manufacture of paper by machines previously patented by John Dickinson, so that they shall be deposited transverse and not parallel to the movement of the cylinder, and this is effected by partitioning off the vat as described, into scallops or troughs, and the pulp so fed into those scallops that "there may be a current along each "scallop at right angles, or nearly so, with the cylinder."

[Printed, 10*d.* See London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 96.]

A.D. 1836. March 29.—N° 7049.

BRINDLEY, WILLIAM.—"Improvements in the manufacture "of tea-trays and other japanned ware, and in the board or "material used therein, and for other purposes;" and these improvements are said to be taking paper boards made from pulp prepared by mixing rags in certain proportion with white paper scraps, pulping the same, and adding soap, alum, vitriol, and olive oil, moulding in sheets and pressing together, forming boards, and pressing these between moulds of the shape of the article required, drying, oiling, drying, &c.; also pressing the paper between two iron, &c., surfaces, drying the board between such surfaces, dipping into oil, &c.

[Printed, 4d.]

A.D. 1836, May 18.—N° 7098.

BROWN, James.—" A certain improvement " or " improvements " in machinery or apparatus for making paper ;" and these consist in applying a vacuum in the manner described by diagrams to the horizontal web or wirecloth of a Fourdrinier paper machine, "without " the introduction of any cylinder or anything intervening between " the open space of the box or chamber in which the vacuum is " produced, and the endless web or wirecloth which carries the " paper pulp."

[Printed, 7*d.*] See London Journal (*Newton's*), vol 10 (*conjoined series*), p. 40 ; Rolls Chapel Reports (seventh), p. 175.]

A.D. 1836, December 9.—N° 7249.

ZINCKE, Frederick Burt.—The title of this invention is, " The " preparing or manufacturing of the leaf of a certain plant so as to ' produce a fibrous substance not hitherto used in manufactures, " and its application to various useful purposes ;" and among which useful purposes it is stated it may be applicable to the manufacture of paper.

First, " preparing or manufacturing the leaf of the plant called " the pine apple, by bruising, beating, washing, drying," and in some instances bleaching the same.

Second, applying such prepared material to various manufactures and purposes for which " silk, flax, cotton, hemp, wool, and other " fibrous materials are now used."

[Printed, 8*d.* See Repertory of Arts, vol. 9 (*new series*), p. 221 ; London Journal (*Newton's*), vol. 11 (*conjoined series*), p. 79.]

A.D. 1837, March 2.—N° 7313.

STEVENSON, David.—The title of this invention is, " A method " of preparing writing paper from which writing ink cannot be " expunged or abstracted without detection," and this is best effected by incorporating into its substance " a chemical preparation " containing some metallic or other base, accompanied by some " chemical compound which will remain in the paper in a passive " neutralized state ;" and as an example manganese is said " to be " used as a metallic base," and " prussiate of potass " as a chemical compound, " suitable for accompanying that base in the " said chemical preparation."

[Printed, 4*d.* See London Journal (*Newton's*), vol. 13 (*conjoined series*), *p. 103.]*

A.D. 1837, March 5.—N° 7316.

AULAS, Charles Francois Edward.—The title of this invention is, " An improvement or improvements in preparing writing " paper so as to prevent the discharge of the ink without detection " and to prevent the falsification of writing thereon."

[No Specification enrolled.]

A.D. 1837, September 14.—N° 7432.

SHAW, Edmund.—" An improvement in the manufacture of " paper by the application of a certain vegetable substance not " hitherto used for that purpose." This substance is " envelopes or " leaves which cover the ears of corn." These are prepared by boiling in acid or alkaline water, steaming, beating, and bleaching as now " practised for the bleaching of rags in paper mills, and " the fibre is in like manner reduced to a pulp, and paper manufactured therefrom; or the quality of the paper may be varied by " the admixture of rag or other filamentous material."

[Printed, 3*d*. See Repertory of Arts, vol. 9 (*new series*), p. 294; London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 158.]

A.D. 1837, November 7.—N° 7462.

AULAS, Charles Francois Edward.—" An improvement or " improvements in preparing writing paper, so as to prevent the " discharge of the ink therefrom without detection, & to prevent " the falsification of writing thereon;" and this consists in covering " the paper with an engraved or printed design composed " of minute figures perfectly identical, & capable of being, on " near inspection, compared with one another, yet so minute & " symmetrically arranged as to give at a distance one uniform " tint to the whole surface;" and with this design is blended or united, " by engraving on the same plate or cylinder" employed in forming the first design, " another design of a bolder character, " presenting so many points of intersection with the original " design as to render an accurate immitation almost if not absolutely " impossible." " The whole is printed either in delible or indelible " ink, or partly in one and partly in the other." The indelible ink on a delible ground " should be aqueous, with a base on " carbon," slightly acidulated and triturated with mucilage to thicken it. The delible ink preferred is a " mixture of pyrolignite " *of iron and* gum dragacanth;" but the paper ought to be previously prepared either by dipping it into nutgalls, or the solution of nutgalls is put "into the trough where the paper pulp "is during the process of its manufacture."

[Printed, 4*d*. See Repertory of Arts, vol. 10 (*new series*), p. 98; London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 297.]

A.D. 1838, May 5.—N° 7633.

SHAW, EDMUND.—"Improvements in the manufacture of paper "and paper board."

These improvements relate "to a mode of applying bituminous "matters in the making of paper and paper boards," and "which is also applicable to the sheathing of ships and other "useful purposes." To effect the application of bituminous matters to the making of paper, mineral or vegetable tar, but by preference Dantzic tar, deprived of its essential oil by distillation, is dissolved in a solution of caustic potash by boiling, and this solution is added, in quantity depending upon the degree it is desired to have the paper bituminous, to the half stuff in the beating engine.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 158.]

A.D. 1838, May 14.—N° 7639.

BERRY, MILES.—"A new & improved method of applying "certain textile & exotic plants as substitutes in various cases "for flax, hemp, cotton, & silk."

The exotic plants consist as follows:—First, "the musa, or the "plantain or bannana;" second, "the cannacorus plants; third, "the ficus or fig-tree; fourth, the agave or aloes; fifth, the karatos "plants; sixth, the ananas, or pine-apple plant; seventh, the "cocos, or cocoa plant; eighth, the palmæ, or palm tree; "ninth, the macaw tree or plant; tenth, the phornium tenax, or "New Zealand flax; eleventh, the saccharum officinarum, or "sugar canes; & in general all the textile plants which grow "between the tropics," and where, when they are green, the processes of reducing to fibre are proceeded with, and thus avoid bringing over extraneous matter which is not wanted. The fibres are extracted by steeping or fermenting, or passing through rollers, *&c., and "bleached by* boiling in water or alkaline chloride, or "other chemical solutions," combed, &c.; and the coarsest or refuse fibres may, among other things, "be reduced into pulp for making paper."

[Printed, 3*d*. See London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 231.]

A.D. 1838, May 15.—N° 7643.

DESGRAND, James Vincent.—"A certain new pulpy product or material to be used in manufacturing paper & pasteboard, prepared from certain substances not hitherto used for such purposes."

This invention consists "in making paper and pasteboard with wood reduced into a state of paste, and of the different sorts of wood" that, "coming under the denomination of white wood, such as poplars," has been found "to answer the best." The process may be described as follows:—Trees deprived of their bark are cut into short logs; these are split into pieces, and the pieces again are chopped into chips. These chips are put into pits, and covered over with "lait de chaux," "which is, in fact, water saturated with lime, as much as it will admit." The chips remain in the bath from three to six weeks, according to the temperature, which dissolves the glutinous parts of the wood. The residue is reduced to pulp by stamping. If for white paper, the pulp is "submitted to the action of the several chemical products which have the property of bleaching vegetable produce."

[Printed, 3*d*. See Repertory of Arts, vol. 11 (*new series*), p. 48; London Journal (*Newton's*), vol. 14 (*conjoined series*), p. 326.]

A.D. 1838, August 15.—N° 7772.

D'HARCOURT, George Robert.—Making paper from "the leaves and stalks of the aloe, the sheaths or covering leaves of the fruit or ear of the maize, otherwise Indian corn, the leaves and stalks of the rice plant; also, the bines or stems of the hop plant, the common field bean, the scarlet and French bean, the stalks or stems of the asparagus and potatoe plant, and all stalks, leaves, and bines of similar vegetable substances," "with or without admixture of rags."

The substances classified are put into tanks and macerated for some days in cold water; or they may be fermented, then pressed, and put into a boiler with a certain "mixture of lime and oil, not

" being fish oil, and steamed and well washed," and "submitted " to the process of trituration as rags are," and "converted into " paper by the same means."

[Printed, 3*d*. See London Journal (*Newton's*), vol. 14 (*conjoined series*), p. 322.]

A.D. 1838, September 6.—N° 7794.

BALMANNO, MORTON.—" A new and improved method of " making and manufacturing paper, pasteboard, felt, and tissues;" and this consists in the employment of and working upon several substances. These substances are divided into five classes, as follows:—

First class, "bark of trees, and the bark of young shoots of " trees."

Second class, those herbaceous plants which partake of the nature of hemp or flax, having a skin or coating, such as hop-bine, &c.

Third class, "those plants not having an outward skin or " coating, or having it in a very slight degree, but having a fibre " intermixed with the ligneous part, such as the stalks of potatoes," &c.

Fourth class, " small roots of trees, shrubs, and plants."

Fifth class, " dead or dried leaves, exclusive of the leaves of " maize or Indian corn."

The treatment of these substances in the making of paper varies a little according to their nature; but they are generally washed and submitted to the action of steam or boiled with caustic alkali, strained, and if necessary again put through the same process, after which they are again reduced to pulp in a paper engine, and bleached by the usual process, and the pulp made into paper and pasteboard in the usual way.

In making felt, or brown or wrapping paper, the processes may be stripping, soaking, boiling, and washing, omitting the bleaching.

[Printed, 4*d*. See London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 159.]

A.D. 1838, November 3.—N° 7850.

COOPER, EDWARD.—" Improvements in the manufacture of " paper."

First, applying pulp made from sugar-cane in the manufacture of paper, as follows:—Cane after the sugar has been removed, and *which is called "cane trash* or mogoss," is bruised, and cut and reduced into fragments, immersed in water, and kept there till it sinks; is afterwards drained, and washed and bleached, and "treated according to the routine followed by paper makers, and "the pulp" made into paper.

Second, the "improvements in the paper engine" consists in altering the roller or cylinder, which is of the enormous mass of "twenty hundredweight," and which is employed for pulping the rags and other materials in the manner described, so as to prevent "great noise and shocks," and delivering the roller at once, with its whole power, parallel with the plate, and so avoid the "causing "a ruinous and unnecessary wear and tear."

[Printed, 6*d.* See London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 160.]

A.D. 1838, December 1.—N° 7883.

SMALL, John.—"Improvements in the manufacture of thread "or yarn and paper, by the application of certain fibrous mate- "rials not hitherto so employed."

These fibrous materials are obtained by crushing "from the "banana, the aloe, the fig, the palm, and the plantain trees." The rollers for the crushing process may be such as are used for crushing the sugar-cane.

[Printed, 3*d.* See Repertory of Arts, vol. 12 (*new series*), p. 247; London Journal (*Newton's*), vol. 15 (*conjoined series*), p. 288.]

A.D. 1838, December 6.—N° 7897.

SWEETAPPLE, Thomas.—"An improvement or improvements "in the machinery for making paper;" and this consists in the application and use of apparatus, with a machine "similar in "principle to Fourdrinier's paper machine, so as to produce that "kind of casual interlacing of fibre with fibre, which shall give "the greatest practicable strength to the paper that the quality of "the fibres will admit of, "or in other words (well understood by "paper makers), it causes the stuff or pulp to be well shut." The apparatus is described by diagrams, and may be stated to be an arrangement of troughs and rollers in such a manner whereby the fibres of the pulp remain for a certain time afloat in the water, and subside gradually on the web, by which a better interlacing of fibre with fibre is effected than can be attained by allowing the water to escape from the fibres immediately the pulp falls upon the web.

[Printed, 1*s.* See London Journal (Newton's), vol. 21 (conjoined series), *p. 268.*]

A.D. 1839, February 4.—N° 7961.

EVANS, JOHN.—" Improvements in the manufacture of paper."

To obtain atmospheric pressure on the pulp, in order to press out the water, a vacuum is produced below a portion of the surface of the wirecloth on which the pulp is laid, and it is stated, that hitherto this has been effected by expensive air-pumps, which cost much money at their first purchase, and are expensive afterwards to keep in repair, and the improvements contemplate substituting for these, apparatus less costly and more easily worked, and which may be described as follows :—Three cylinders, open at top, and each of which are made to communicate by tubes under the portion of wirecloth to be exhausted; these tubes have valves opening outwards above some water placed in these cylinders. Other cylinders, with a valve opening outwards at top and open at bottom, are inverted in the first cylinders. The upper cylinders have rods affixed to their upper ends, by which the vessels receive motion from a three-throw crank. On the cylinders being raised air will be drawn through the exhausting tubes, and on the descent of the cylinders the valves on the tubes will be shut, and the valves on the top of the cylinders open.

[Printed, 6*d*. See Repertory of Arts, vol. 13 (*new series*), p. 72; London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 162; Mechanics' Magazine, vol. 32, p. 389.]

A.D. 1839, February 21.—N° 7977.

JOYNSON, WILLIAM. — " A certain improvement or certain " improvements in the manufacture of paper ;" and these improvements consist in forming letters, figures, or other water-marks, by indentation, and by means of projecting letters, figures, and devices of metal in various forms, and either affixed upon rollers, or applied in any way, so as to produce the desired effect. The " raised " letters, figures, or devices, may either be made of round or cylin- " drical metal wire ; and they may be affixed to what is known as " the dandy roll, the dancer, the top roller," &c. ; " and the inden- " tations are made by it in the pulp whilst passing underneath it, " and lying upon the endless wirecloth," when being carried forward by the machine.

[Printed, 6*d*. See London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 93 ; Inventors' Advocate, vol. 1, p. 83.]

A.D. 1839, April 9.—N° 8027.

CROMPTON, Thomas Bonsor. — "Improvements in the "manufacture of paper;" and these improvements consist in combining rotary fans with paper machines, having moving endless cloths of wire, so as to produce a gradual vacuum below the moving endless wire cloth employed. "The rotary fan," similar to those which are now extensively employed as blowing machines, "is connected by a pipe to the vacuum chamber; the fan is generally caused to revolve one thousand two hundred times a minute; "a water syphon indicates the pressure, and the pressure may be "varied by the speed of the fan employed."

[Printed, 6*d*. See Repertory of Arts, vol. 13 (*new series*), p. 69; London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 92; Mechanics' Magazine, vol. 32, p. 389; Inventors' Advocate, vol. 1, p. 147.]

A.D. 1839, April 15.—N° 8032.

CROSLEY, Henry. — Manufacturing paper from refuse tan, after it has been used to tan leather or other purposes, not destructive to its fibre, and also from refuse or spent hops after they have been used in brewing, by subjecting the said tan and hops to the mode of manufacturing paper from rags.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 209.]

A.D. 1838, April 20.—N° 8037.

SAUNDERS, James Fergusson. — The title of this invention is "Improvements in the manufacture of certain descriptions "of paper, millboard, paper maché, and other matters of that kind "capable of being produced from such description of paper pulp;" being a communication.

[No Specification enrolled.]

A.D. 1839, July 2.—N° 8138.

ZANDER, Henrik.—Manufacturing "paper from horses' dung, "and mixed with straw of any kind, in such a state as the manure is "taken from the stables," the pulp of same being mixed "with the "pulp of linen rags, according to the quality of paper" required.

The straw is separated from the dung, and cut very small, is treated with water, as is the dung, and by boiling, treating with caustic soda, &c., and passing through rollers, made into pulp for coarser or finer paper. The pulp may be bleached by chlorine, water, &c.

[*Printed, 3d.* See Inventors' Advocate, vol. 2, p. 35.]

PAPER, PASTEBOARD, AND PAPIER MÂCHÉ.

A.D. 1839, August 26.—N° 8209.

MAC GAURAN, THOMAS. — "Manufacturing paper from the "hop-bine, either by itself, as a substitute for linen or other rags, or "it may be mixed with them or other suitable material for the pur"pose of making paper;" and this is effected by cutting into small pieces the bine after the hops have been removed, soaking, washing, rolling, pressing, bleaching with chloride of lime, and pulping, &c.

[Printed, 3*d*. See Repertory of Arts, vol. 16 (*new series*), p. 57; London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 30; Inventors' Advocate, vol. 2, p. 180.]

A.D. 1839, September 5.—N° 8212.

DONKIN, BRYAN.—"Improvement or improvements to be used "in the process of making paper by hand or by machinery;" and these improvements consist in passing the pulp through a trough containing boards with oval-shaped holes, constructed and so arranged that the pulp passing over the holes is separated, and deposits in these holes any sand, &c. The trough is so arranged that the pulp passes through three distinct channels in which these boards lie, so that as often as the boards require washing from sand, &c., the paper stuff is prevented from running into the channel by a small stop-gate, and the boards removed are cleaned "without interrupting the flow of the stuff through the other "two channels."

[Printed 9*d*. See Inventors' Advocate, vol. 1, p. 195.]

A.D. 1839, October 17.—N° 8242.

DICKINSON, JOHN.—"Certain improvements in the manufac"ture of paper;" and, first, a new mode of introducing threads into paper manufactured by machinery during the formation of the paper, so that a certain number of threads may be inserted near to one side of the sheet, and other threads be inserted at the same time nearer to the reverse side of it, "in combination with which "process it is also possible to introduce at the same time other "threads into the middle of the paper," and this is effected by fixing sets of bobbins, covered with the threads required, in positions so that the threads should touch the periphery of the cylinder at different points.

Second, producing with more certainty the gradual formation of the paper on the cylinder, by regulating the flow of water into the interior of the cylinder by means of a segment, arranged in a *peculiar manner* described, in the interior of the cylinder.

Third, using two very fine threads of different colours twisted together instead of single threads, and if it were required three ranges of these threads might be put into the paper by an arrangement of bobbins. But when the paper, with the threads thinly covered by a film of paper, is pressed between the press rolls, the threads are apt to draw themselves out of the paper, a new arrangement is required.

Fourth, a mode of counteracting the drawing out of the threads, by fixing a small roll parallel with the press roll, and as near to it as possible, but not to touch it or the paper upon it. This small roll revolves faster than the press rolls, and the paper is led from the press rolls over it, and conducted to other press rolls, and afterwards over a roller covered with felt.

Fifth, "sizing of paper."—This is performed in a vessel capable of being heated by steam. Size is put into the vessel, then the paper, and afterwards a domed or convex-shaped lid is fixed, having an air pipe, through which the vessel is to be exhausted by an air-pump. The arrangements required are described, and it is stated that "by this method paper which has been engine-sized "may be tub-sized, and the strength and non-absorbing quality "greatly increased."

[Printed 11*d*. See London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 282; Inventors' Advocate, vol. 2, p. 200.]

A.D. 1839, November 19.—N° 8273.

BERRY, Miles.—The title of this invention is "An invention or "discovery, by which certain textile or fibrous plants are rendered "applicable to making paper, and spinning into yarns and "weaving into cloth, in place of flax, hemp, cotton, and other "fibrous materials commonly used for such purposes." The textile or fibrous plants, the application and use of which are claimed for paper making, &c., is named "Esparto," and is of the class of plants named "Stipa," genus "Gramina," and is commonly called "Esparto," or Stipa "terracissima," and grows more particularly on the southern coast of Spain and the borders of the Mediterranean Sea and Straits of Gibraltar; also "in Greece "and the northern parts of Africa."

To make the esparto into white paper and cardboards, it is bruised, crushed, steeped in lime water, pulped in the ordinary engine, and mixed with a certain amount of rags or other fibrous material, *bleached* in the usual manner, sifted or refined, and made into paper. "When applied or used to make common or ordinary "papers or cardboards for the jacquard loom, it can be used in "its natural state, after having been left in hot water, and pulped "together with rags in the engine."

[Printed, 3*d*. See London Journal (*Newton's*), vol. 19 (*conjoined series*), p. 413; Inventors' Advocate, vol. 2, p. 356.]

A.D. 1832, November 25.—N° 8283.

CRAIG, James.—"An improvement or improvements in the "machinery for manufacturing paper;" and these improvements are "divided into two parts, the one consisting of an improved "apparatus for boiling or washing rags or other material previous "to their being put into the breaking-in engine trough to be "reduced into pulp, and applying of part of said apparatus to the "'breaking-in engine' so as to cause it to wash rags or other "material, and reduce them more effectually than by the method "in common use."

The apparatus for boiling or washing rags is fully described, and consists of a chamber fitted with pipes by which steam is conducted into it, and a drum or roller, upon the periphery of which are fixed a number of paddles, which are for the purpose of moving the rags about during boiling and washing, with other arrangements, such as a sand-trap of wire cloth, and a larger one for buttons, nails, &c.

The "breaking-in trough," as it is called, is a large vessel with a number of frames or drainers of wirecloth or other suitable material, with arrangements for drawing off the water pressed out of the rags or pulp undergoing washing. Other methods for draining and washing rags are described, and also a revolving wheel is particularly described and claimed.

[Printed, 1*s*. 9*d*. See Inventors' Advocate, vol. 2, p. 355.]

A.D. 1839, December 13.—N° 8310.

RANSON, Robert Gill, and MILLBOURN, Samuel.—The title of this invention is "Improvements in the manufacture of paper;" and these improvements, which are described at length by diagrams, consist of, first, a mode of sizing machine-made paper, that is to say, paper not made in separate sheets but in continuous lengths, by causing the long sheets to be passed into a vessel containing size, in such manner that both sides of the paper may take up the size, and the superfluous size may be removed by passing *between pressing rollers.*

Second, a mode of drying machine-made paper, by conducting the long sheets "partly around open or framed reels or cylinders, "having within them revolving fans or wheels, by which heated "air is thrown against the surfaces of the paper."

[Printed, 2*s.* 6*d.* See London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 871; Inventors' Advocate, vol. 2, p. 404.]

A.D. 1839, December 21. — Nº 8323.

GIBBS, Joseph.—"An improvement or improvements in the "machinery for preparing fibrous substances for spinning, and "in the mode of spinning certain fibrous substances." The fibrous substances "are flax, New Zealand flax, and hemp," and "other fibrous materials requiring a like preparation." The improvements consist,—

First.—In combining machinery "in such manner as to give a "vibratory motion sideways in the direction of the length of the "rollers at the time of their having rotary motion."

Second.—"Combing out and obtaining slivers of waste silk and "wool."

Third. "Employing previously spun yarn or thread, and coat-"ing the same with fibre."

[Printed, 1*s.* See London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 828; Inventors' Advocate, vol. 2, p. 405.]

A.D. 1839, December 21. Nº 8324.

YOUNG, George Lindsay. The title of this Patent is "An "improved surface for paper, mill or card board, vellum, and "parchment.

[No Specification enrolled.]

A.D. 1840, January 3. — Nº 8334.

COWAN, Charles, and RAMAGE, Adam.—The title of this invention is, "Improvements in machinery used in the manufacture "of paper;" and which improvements are said to consist in adding or applying and combining within the interior of such a drum as is described in the Specification of Patent Nº 6148, "scoops or "buckets such as are described," for the purpose of elevating the water which has entered into "the cylinder through its wire "circumference." This drum is to be employed "instead of the "ordinary *strainers in a* pulping machine."

The title of this invention was altered by Disclaimer from "Im-
" provements in machinery used in the manufacture of paper," to
" An improvement in machinery used in the manufacture of
" paper," June 27, 1840.

[Printed, 10*d*. See London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 16; also, vol. 21 (*conjoined series*), p. 479, for Disclaimer; Inventors' Advocate, vol. 3, p. 20.]

A.D. 1840, March 30.—N° 8458.

MARTIN, Henry.—"Improvements in preparing surfaces of
" paper."

And first.—By " combining thereon a coating of oil paint with
" subsequent embossing."

Second.—" Combining thereon a coating of oil paint, and
" afterwards printing," &c., thereon.

Third.—" Preparing surfaces of paper by obtaining thereon a
" coating of oil paint, and subsequently glazing or planishing the
" same."

Fourth.—Coating paper with oil paint by means of rollers.

[Printed, 4*d*. See Repertory of Arts, vol. 16 (*new series*), p. 50; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 17; Mechanics' Magazine, vol. 33, p. 382; Inventors' Advocate, vol. 3, p. 229; Engineers' and Architects' Journal, vol. 3, p. 396, and vol. 6, pp. 305 and 400.]

A.D. 1840, July 1.—N° 8558.

McMURRAY, William.—" Certain improvements in the manu-
" facture of paper;" and these improvements relate " to a mode
" of removing water from a suitably constructed rotary strainer
" during the process of reducing rags when working pulp for
" the manufacture of paper," and this is effected by a syphon
tube, the construction and arrangement of which is described by diagrams.

[Printed, 6*d*. See Repertory of Arts, vol. 17 (*new series*), p. 139; London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 165; Inventors' Advocate, vol. 4, p. 21.]

A.D. 1840, July 29.—N° 8580.

BENNETT, Joseph.—The title of this invention is, " Certain
" improvements in machinery for cutting rags, ropes, waste, hay,
" straw, or other soft or fibrous substances usually subject to the
" operation of cutting or chopping, part of which improvements
" are applicable to the tearing, pulling in pieces, or opening of
" rags, ropes, or other tough materials;" and it is stated that this
is " *an operation* of very great importance in paper making." A

combination of machinery for this object is described, consisting of a feeding roller and mouthpiece, holding the material to be operated upon by a cylinder, revolving at a quick speed towards the feeder, full of sharp steel teeth, and as the rags are carried forward, an arrangement is made to receive the dust they let fall. There is also a dust cylinder, and other arrangements.

[Printed, 10*d*. See Repertory of Arts, vol. 15 (*new series*), p. 264; Mechanics' Magazine, vol. 34, p. 124; Inventors' Advocate, vol. 4, p. 84.]

A.D. 1840, November 10.—N° 8698.

AMOS, CHARLES EDWARDS.—"Certain improvements in the "manufacture of paper;" and these are said to consist of six in number, as follows:—

First, a self-acting apparatus to lower the engine roll gradually nearer to the plate as the beating operation goes on, instead of regulating the roll entirely by hand, "in order that the rags may "be beaten or ground into stuff or pulp of an equal degree of "firmness or texture."

Second, "a mode of regulating the supply of pulp to the "paper-making machine, in order to produce papers of any re"quired thickness," and this is to be effected by a "pulp regu"lator." This pulp regulator may be described as a box which receives the pulp, and which, when the requisite quantity passes into it, descends, and in doing so shuts off a valve, thus preventing for a time any further flow of pulp.

Third, "an improved sifter or strainer, through which the pulp "is passed for the purpose of arresting the knots and lumps," by working it through sieves by the action of a clapper, "the "sieve plates remaining quiescent," &c.

Fourth, "certain novelties in the construction, arrangement, "and action of parts of the machine in which the pulp is depo"sited, that is moulded or made into continuous lengths of "paper;" and these relate to giving to the wire web a vibratory motion by means of certain arrangements called vibrating levers, so as to afford greater facility in closing or felting the pulp.

Fifth, "an improved method of heating drying cylinders," preferring hot air to steam. "The circulation may be caused by "a fan, by exhaustion, or by a chimney draught."

Sixth, "an improved method of drawing the paper towards the "cross-cutting knives, and regulating the length of the sheet to "*be cut;*" and this is effected by what is termed flat, sliding, and

" quiescent presses, whether the moveable press works on guides " or slides or in the arc of a circle by a single or a combination " of levers."

[Printed, 2*s*. 6*d*. See London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 153; Mechanics' Magazine, vol. 34, p. 412; Inventors' Advocate, vol. 4, p. 325.]

A.D. 1840, November 25.—N° 8715.

BARRATT, Thomas.—" Improvements in the manufacture of " paper."

First, applying " currents of air to paper when being dried by " cylinders heated by steam," whether in the state of "engine " size or water leaf," or after sizing. The blast " may be produced by rotary fans or other blowing apparatus, and delivered " in a thin wide stream through pipes having a throttle valve " with an axis passing to the outside, in order to regulate the " blast of air to the paper."

Second, applying currents of air to cool the surface of paper after being sized as it passes to the steam drying cylinders, by causing the paper to pass first over an open reel which has a rotatory fan within it, by which the paper will be fanned.

[Printed, 6*d*. See Repertory of Arts, vol. 16 (*new series*), p. 22; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 18; Mechanics' Magazine, vol. 34, p. 445; Inventors' Advocate, vol. 4, p. 357.]

A.D. 1840, December 23.—N° 8751.

DICKINSON, John.—" Certain improvements in the manu" facture of paper;" and these consist in the sizing of paper continuously, by " unwinding a scroll of dried paper from a reel " or roll of ordinary dimensions and conducted through heated " size of the ordinary strength," and after pressing out " the excess " of size " re-winding the same paper on to another reel, the whole being performed in an air-tight vessel partially exhausted of air, in the manner described in the Specification of Patent N° 8242.

[Printed, 1*s*. See Repertory of Arts, vol. 16 (*new series*), p. 129; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 20; Inventors' Advocate, vol. 5, p. 4.]

A.D. 1841, May 11.—N° 8957.

TAYLER, Edmund.—The title of this invention is, " Certain " improvements in the construction of carriages used on rail" roads;" and several of these improvements are using papier *maché, in preference* " that made by Mr. William Brindley," (see Specification of Patent N° 7049,) instead of wood in constructing various parts of railway carriages.

By assignment the Patent became the property of John Coope Hadden, and a Disclaimer by him is allowed, April 3, 1847, wherein, among other improvements, the use of papier maché is disclaimed.

[Printed, 11*d*. See Repertory of Arts, vol. 9 (*enlarged series*), p. 148; London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 424; Mechanics' Magazine, vol. 35, p. 413; Inventors' Advocate, vol. 5, p. 325.]

A.D. 1841, October 7.—N° 9110.

INGRAM, Thomas Wells.—The title of this invention is, "Im-" provements in shears and other apparatus for cutting, cropping, " and shearing certain substances;" and these improvements apply to several descriptions of instruments detailed, and also to chopping machines for rags, ropes, junk, &c., in preparing them for paper making and other uses. These chopping machines are described at considerable length, and two methods are given for feeding in the rags to the cutter, the cutter frame of which is made, along with other parts, to rise and fall by the rotation of the main shaft; and in falling causes the material presented by the feeding apparatus to be cut off, and "the rags, &c. thus cut off fall down" " into a suitable receiver below," and "are thence taken to be " washed and beaten into pulp in the ordinary way.

[Printed, 2*s*. 8*d*. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 436.]

A.D. 1841, December 21.—N° 9194.

WATSON, Henry Hough.—The title of this invention is, " Certain improvements in dressing, stiffening, and finishing " cotton and other fibrous substances, and textile and other " fabrics, part or parts of which improvements are applicable to " the manufacture of paper, & also to some of the processes or " operations connected with printing calicoes & other goods."

The first part of this invention relates to the treatment of fibrous substances (not paper) so as to singe, burn, or char the fine fibres or down.

The second part relates to stiffening and finishing those substances, and this is effected by immersing them in certain chemical solutions and drying them, and these solutions may contain also *gum, mucilage*, starch, flour, &c.; among these chemical solutions sulphate of magnesia is named, and the treatment of paper with its solution is detailed.

The third part of this invention relates to stiffening and finishing, and consists in applying to all goods from fibrous substances "a compound produced by mixing a solution of sulphate of "magnesia with a solution of resin in alkali. (The alkaline compound of resin is known and much used under the name of "vegetable size in the manufacture of paper.") A "soap "combination of tallow or grease and alkali" may be substituted for the resin compound. The goods may be impregnated with a solution of sulphate of magnesia and afterwards "with a solution "of soap or of the vegetable size," or vice versâ. This is applicable to the manufacture of paper. "The sulphate of magnesia, "instead of alum" (which is generally used) "is to be put into "the paper engine along with the vegetable size or soap," and mixed with the pulp.

The fourth part relates to improvements in stiffening, and consists in submitting or exposing all goods, as before described, which have been treated in any way "with a solution or mixture "of or containing sulphate of magnesia or alum, or other salt "having a metallic oxide for its base, to the action of ammoniacal "gas, by which the base is liberated from the acid," and is deposited in or upon the cloths or goods.

Fifth, applying to cloth or other goods in the dressing, stiffening, and finishing a "compound of ammonia with lard, oil, or "other grease," or "ammonia with wax, spermaceti, or stearine," either alone or with other matters.

Sixth, drying cloth and goods by applying "the heated air "produced by or resulting from the action of atmospheric or "other air containing oxygen upon charcoal, coke, or other "carbonaceous matter in state of ignition." The air resulting from the combustion, instead of passing directly by a flue into the external atmosphere, is allowed to pass into the room or chamber where the goods are hung, the effect upon cloth is to give it "what is called by the trade a hard finish."

It is not stated by the patentee that the three last processes are to be applied to the manufacture of paper.

[Printed, 4*d*. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 361; Mechanics' Magazine, vol. 37, p. 4.]

A.D. 1842, January 29.—N° 9242.

HUGHES, Joseph.—"Certain improvements in the method or "process of manufacturing paper."

First, manufacturing "bleaching powder" and "bleaching "liquor," by the application, employment, or use of the waste or superfluous gas after the common gassing process has been fully performed, "and instead of opening the chests and allowing "the superfluous gas to escape," passing it into a lower chamber, which is provided "with layers of lime." "A portion of the gas "may be employed in making the bleaching used in an after "process," and this is effected by an arrangement of exhausting pumps, and impregnating lime water with the gas thereby.

Second, destroying the gas in the rags or half stuff by the immersion of them in a weak solution of lime and water preparatory to the "bowking" or "bleaching process," either in the rag engine or "an independent cistern."

Third, applying to Fourdrinier's machine one, two, or more pairs of friction bowls or rollers, with or without felt attached, so that any amount of friction can be given "for the purpose of finishing the paper by friction."

[Printed, 1s. 8d. See London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 85.]

A.D. 1842, February 15.—N° 9261.

CRAMPTON, Thomas Russell, and HADDAN, John Coope.—The title of this invention is, "Improvements in steam engines "and railway carriages;" and these improvements are said to be thirteen in number, and one is applying "to railway carriages and "locomotive steam engines" "wheels with felloes of wood, "papier machee, or other suitable material, tightened by a bevelled "ring or circular wedge."

Nothing is said of how the papier mâché is to be manufactured.

[Printed, 1s. 9d. See Mechanics' Magazine, vol. 37, p. 340; Record of Patent Inventions, vol. 1, p. 85.]

A.D. 1842, May 23.—N° 9356.

MIDDLETON, Thomas.—"An improved method of preparing "vegetable gelatine or size for paper, and also an improved mode of "applying the same in the manufacture of paper."

First, producing paper size by causing "the resin or other "equivalent ingredient to absorb as much alkali as is required,

" then drawing off the superfluous alkali," dissolving the residue in water, and adding alum in proper quantity. In this state it may be mixed with the pulp in the ordinary manner, or in the way described in the second part of this invention.

Second, relates to the apparatus by which the admixture of size and pulp is to be effected, and consists of a reservoir having a cock furnished with a regulator, " by means of which the pulp " may be sized to any degree required," from this the size flows into a vat with the pulp, " where it is submitted to a final stamping or beating."

[Printed, 10*d.* See Record of Patent Inventions, vol. 1, p. 305.]

A.D. 1842, November 8.—N° 9513.

WRIGLEY, Thomas.—" Certain improvements in machinery for " manufacturing paper;" and these consist in applying " machinery " whereby the roll of the rag engine (whether for washing, " breaking, opening, separating, beating up, or clearing the rags) " in the manufacture of paper may be held, lowered, caused to " dwell, and beat up, when at its lowest point," for any " length of " time, & raised again." The construction and application of a cam wheel to be employed with the other machinery is particularly described.

[Printed, 7*d.* See London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 254.]

A.D. 1843, January 26.—N° 9603.

CHAPMAN, Henry.—The title of this invention is " A fabric for " maps, charts, prints, drawings, and other purposes;" and this may be made in several ways, and it is proposed to call it " paper " cloth." The cloth, or whatever fabric to be employed, is wound on a reel, and this reel is suspended over certain parts of a Fourdrinier paper-making machine; the cloth is led with the paper between rollers, either with or without " gum, glue, size, starch, " or other adhesive material," depending either upon the cloth, or where the roller which delivers it may be suspended. " The " adhesive material preferred is of water, soda, best yellow resin, " linseed oil, and glue in certain proportions."

[Printed, 4*d.* See London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 188; Mechanics' Magazine, vol. 39, p. 270.]

A.D. 1843, February 11.—N° 9633.

BREWER, Alfred.—"Improvements in machinery for manu-"facturing paper;" and these are said to be three in number, as follows:—

First, the general combination and arrangement of a meter for supplying pulp from the pulp chest. The "motion being com-"municated to the valves, or pierced plugs of such meter" by "the driving shaft of the paper machine," by which means the supply is more or less according to the speed of the machine.

Second, the general combination of a machine for diluting the pulp uniformly, and as the valves, &c. are connected with the driving shaft, the supply of water will be "in proportion to the "speed of the paper machine."

Third, consists "in the construction and application of the "combined apparatus of the revolving surface of wire-web and "gathering roller for the purpose of collecting and saving the pulp "hitherto wasted and lost in the manufacture of paper," for it is stated that in "the ordinary process of cleansing the rag in the "engine a considerable quantity of fibre passes off." The cylinder is worked in a box with two compartments, and it is furnished with scoops, which revolve around a fixed tube employed for carrying off the clear water passing through the cylinder.

[Printed, 1s. 4d. See London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 85.]

A.D. 1843, June 3.—N° 9757.

BROWN, William.—"Improvements in the manufacture of "porcelain, china, pottery, and earthenware, and which improve-"ments are also in part applicable to the manufacture of paper, "and to the preparation of certain pigments or painters' colours."

First, in the manufacture of porcelain, &c. the substances, after being prepared, but before manufacturing, are put into an air-tight vessel fitted with an air-pump, condensing pump, agitator, and stopcocks. The air is abstracted, the material stirred by the agitator, and the vacuum retained for half an hour, after which the air is admitted, the condensing pump fixed, and the pressure raised from eighty to one hundred pounds on the square inch. The materials are afterwards discharged into suitable vessels, and when settled, the liquid run off, when the substance is dried till fit to be worked. It is stated, that "by this improved process a

" greater degree of solidity and strength is given to the ware than " is attained" " by the ordinary mode."

Second, submitting pulp, &c. to the above process, and the paper, &c. made from pulp so treated is closer, finer, &c.

Third, pigments, &c. are to be treated similarly.

[Printed, 3*d.*]

A.D. 1843, June 10.—N° 9771.

NEWTON, William.—The title of this invention is, "Certain " improvements in the preparation of paper designed for bank " notes, government documents, bills, cheques, deeds, & other " purposes wherein protection & safety from forgeries or counterfeits are required." The "preparation of paper" does not in this invention allude to the preparation in making, but refers to preparation after making, and therefore should not, perhaps, be under this head. It may, however, be described shortly, as follows:—Covering paper with two designs composed of elements regular and irregular, one of the designs being printed in visible ink, the other in invisible ink, both being delible; and in doing this it is necessary to employ "only paper manufactured by hand with rags " naturally white and not bleached by chlorine."

[Printed, 5*d.* See Repertory of Arts, vol. 3 (*enlarged series*), p. 304; London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 339; Mechanics' Magazine, vol. 40, p. 347.]

A.D. 1843, June 15.—N° 9787.

WRIGHT, Lemuel Wellman.—"Certain improvements in " machinery or apparatus for bleaching various fibrous substances," and likewise "improvements in machinery or apparatus for con- "verting or manufacturing the same into paper."

First, "the novel arrangement and construction of the several " parts of machinery or apparatus" employed in bleaching straw and other fibrous substances (such as wheat, oat, barley, or rye straw, and jute wood, commonly called surat).

Second, "machinery or apparatus for washing the same."

Third, the peculiar adaptation of the machinery or apparatus for reducing the same into pulp.

Fourth, in the continuation of the washing of the pulp, and also in the apparatus employed for the purpose of boiling the same by high-pressure steam.

Fifth, machinery or apparatus for washing from the boiling process, for scouring, bleaching, or other chemical processes to prepare the pulp for use.

Sixth, improvements upon the invention contained in N° 6713 in the drying cylinder, by introducing into a large cylinder made hollow, steam, &c.

[Printed, 1*s*. 10*d*.]

A.D. 1843, August 10.—N° 9863.

BROOMAN, Richard Archibald.—"The manufacture of " paper, cordage, matting, and other textile fabrics from certain " vegetable matters not heretofore made use of for that purpose, " as also for the application of the said materials to the stuffing of " cushions and matrasses."

Manufacturing paper, &c. "from the convolvuli of the cissus " genus or family of plants." These "abound in the West India " islands, English, French, and Dutch Guiana, the Brazils, coast " of Africa, & other places." All the plants of this order may be used, but those known at Guadaloupe "as 'oua oua' or 'baba,' " which is the mimosa scandens of Linneeus," the "guidandina " baudue" or "yeux à bourrique" or "yeux à bœuf," and the ledum or marsh bindweed, will be found the most suitable. The stems are first stripped and beaten, then dried, boiled in water with American potash, washed, bleached "by hydrate of chlorine" or other approved means. If better whiteness be required, the fibres are boiled with soda, washed and steeped in water saturated with slaked lime, and reduced to a pulp by beating or pounding.

The bark of the West Indian pear tree and herbes coupuntes of the West Indian islands are also applicable to the making of paper, &c.

The fibre of these substances may be used for stuffing cushions, &c.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 207; Mechanics' Magazine, vol. 40, p. 207; Engineers' and Architects' Journal, vol. 7, p. 88.]

A.D. 1843, November 21.—N° 9953.

HADDAN, John Coope.—"Improvements in the mode of manu" facturing of papier machee & other articles made of vegetable " pulp," by combining successive layers of wet pulp, such as is used in the manufacture of paper, by winding it round a cylinder until it becomes of the thickness required, and then cutting it off the cylinder, and pressing and drying it flat, or in any other form or shape of which it is susceptible. This may be done with the ordinary paper machines, modified so as to produce the effect, and which are described by diagrams. One of the most important modifications is a second cylinder or drum of light material, such as wood, which receives the pulp from the first cylinder after it obtains a certain degree of consistency, and upon which it is wound in successive layers until an article of the required thickness is produced, &c.

[Printed, 7*d.* See London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 160; Engineers' and Architects' Journal, vol. 7, p. 198.]

A.D. 1844, January 23.—N° 10,023.

NASH, THOMAS.—" Certain improvements in the machinery for " the manufacture of paper;" and these consist of,—

First, the general arrangement and combination of parts of a " rag washing or cleansing apparatus." The apparatus is fully described by diagram, and may be stated generally to consist of a revolving cylinder, partitioned off in such a manner as " to separate " and agitate the rags while the cylinder is revolving." Water is admitted through the hollow axis of the cylinder.

Second, " improved apparatus for drying paper." These consist of a series of stoves, having drums revolving round them, and between each stove and drum a fan, which revolving with the drum causes a current of air, which serves materially to dry the paper as it " passes successively round the drums."

Third, improved apparatus for glazing paper, consisting of a cylinder having fillets at the end in combination with rollers, the arrangement being such that " copper plates, such as are commonly " used in paper glazing," having once passed between the cylinder and rollers, " can be immediately passed back again without " removing them from the apparatus, & so on as often as may " be found requisite."

[Printed, 1*s.* 10*d.*]

A.D. 1844, February 21.—N° 10,064.

SHELDON, WILLIAM.—The title of this invention is, " Improve- " ments in the manufacture of buttons, and in japanners' ware and " articles in substitution of papier machie," and there are three inventions described:—

First, "making die and pressure-made buttons by applying a "composition of fibrous materials with adhesive matter with other "materials," and "by preference the following materials" are employed in certain proportions, namely, glue dissolved in water, common cotton or flock, linseed oil, venus turpentine, also whiting or blue-black, or a mixture of the two, lampblack, fine flour emery; these are all made into a dough consistency, and rolled into sheets of the desired thickness for the ulterior manufacture. When making coloured goods, other substances are to be added, or some of the above are to be omitted.

Second, "making japanners' ware & articles in substitution "of papier machie, by applying a combination of fibrous materials "with adhesive matter between surfaces of paper;" and in this case the substances named are, glue dissolved in water, to which is added flour, sharps, spent hops, whiting, hair, "finely cut human "hair is preferred." These are all boiled together and cooled, rolled into sheets, and a thin sheet of paper placed on each side of the sheets, which are to be treated with oil and afterwards manufactured into goods.

Third, the following articles may be employed, and as before, in certain proportions:—Pulp made in the ordinary manner, sharps separated from flour, spent hops, fullers' earth, flour, with or without glue. These are mixed with water and run into a sieve, such as is used for paper making, and afterwards passed through felts or flannels, and manufactured into goods.

[Printed, 4*d*. London Journal (*Newton's*), vol. 25 (*conjoined series*), p. 237.]

A.D. 1844, June 21.—Nº 10,234.

PHIPPS, CHRISTOPHER.—"An improvement or improvements "in the manufacturing of paper, and in marking, writing, and "other papers, or in the machinery employed for those purposes;" and these improvements are said to be two:—

First, in sizing paper as it comes from the machine "in a partially "dried and heated state," by causing it "to pass over one heated "cylinder only, of from two to three feet in diameter, according to "the thickness of paper to be sized;" size is afterwards "applied "by means of an elastic roller," "as the paper is wound upon a "cylindrical reel."

Second, making sheets of writing and other papers from a stamp, prepared by placing such stamp, in preference cut out of paper, upon a sheet of paper, and secured by glue; and a second sheet of paper is to be laid over the letters so that the forms of the letters, &c., " may be contained between the two sheets." This is called the stamps, and the paper to be stamped is placed on each side of it, and the whole, incased in sheets of copper or brass, is passed between the rolls of a rolling press in order to produce the requisite impression to be marked.

[Printed, 11*d*. See London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 24.]

A.D. 1844, July 10.—N° 10,252.

POOLE, Moses.—" Improvements in the manufacture of paper," and these consist in employing " the broom plant reduced to a " pulpy state." Common broom is preferred, and it is steeped, crushed, and washed by heated water, pressed and treated with a solution of lime, with or without soda, washed, pressed, bleached, and steeped in " a bath of liquid chlorine," to which is afterwards added a certain quantity of muriatic acid. The pulp is then in a fit state for use.

By a Disclaimer and Memorandum of Alteration in 1845, an alteration is made which does not affect the invention generally as above described.

[Printed, 4*d*. See Repertory of Arts, vol 5 (*enlarged series*), p. 164; London Journal (*Newton's*), vol. 26 (*conjoined series*), p. 95; Engineers' and Architects' Journal, vol. 8, p. 119.]

A.D. 1844, August 29.—N° 10,300.

FIELDER, Frank.—The title of this invention is, " Certain " improvements in wirework for the manufacturing of paper, and " the application thereof to such purposes."

First, "weaving wirework for the making of paper," by the taking up and depressing of two or more adjoining contiguous warp wires alternately; and also applying straight laid or unbent wires " for forming the weft of woven wirework; the weft wires " in both cases, whether wove or laid, being at least one-fourth " thicker than the warp wires, in order to give an increased " waterway."

Second, "the interweaving or application of silk, cotton, flax, " hemp, or other cords or twist" to wirework for making seams, watermarks, or designs in the paper.

Third, " making a double-warped fabric upon woven wirework," and the machine for doing so is described by diagrams.

Fourth, forming endless bands of such wirework, and applying them in making paper, and this is done by lacing or weaving the two ends together by hand, and it is stated that this double warped fabric enables this to be done, "so as to avoid the ordinary "damage occasioned by the traverse seam or joint of ordinary "endless bands."

[Printed, 9*d*.]

A.D. 1844, September 26.—N° 10,329.

MACKENZIE, Sir George Steuart.—The title of this invention is "An improvement or improvements in the manufacture of "paper, more particularly for the purposes of writing and copying "writings, and machinery for effecting the same, also the manu-"facture of a fluid or fluids to be used with the improved paper "in the manner of ink," and first substituting a transparent, and as much as possible a colourless and innocuous fluid for writing with, and this is attained by pressing a powder into the paper after it has been sized, and before it is finished. The powder employed consists of gall nuts or their salts, or tanning substances, anhydrous ferrocyanide of potassium, carbonate of lime, or anhydrous carbonate of soda, rice flour, in proportions which may be varied, and a machine is described by which this operation may be effected. The colourless fluid for writing on this paper is by preference a solution of permuriate of iron.

Second, preparing a black indelible ink to be written with on paper, &c. prepared as above, consisting of indian ink and permuriate of iron in water; or lampblack prepared from bones, mucilage of gum arabic, and permuriate of iron.

Third, "taking copies of writings done with the said indelible "ink on copying paper prepared" with the dry powder.

[Printed, 8*d*. See London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 26.]

A.D. 1845, February 4.—N° 10,507.

VARNHAM, Arthur.—"A safety & protective paper," which consists of a white sheet or surface on one or both sides of a coloured sheet. Working by moulds, a white sheet is first moulded and couched; a coloured sheet is next moulded and couched on to the first sheet, and if another white sheet be required, it is moulded and couched on to the others. In manufacturing this paper by the machine, the sheets are made on separate rollers, and are united into one sheet in the couch rolls.

[Printed, 3*d.* See Repertory of Arts, vol. 6 (*enlarged series*), p. 244; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 106; Engineers' and Architects' Journal, vol. 8, p. 358.]

A.D. 1845, March 11.—N° 10,549.

GRUBB, THOMAS.—"Improvements in bank notes, and ma-" chinery connected therewith, parts of which are also applicable " to cheques, bills, & other documents." One part of this invention relates to the construction of machinery for printing, numbering, &c. bank notes, &c., and the other to prevent bank notes, &c. being "counterfeited by means of the recently discovered arts " of photography and anastatic printing;" and this is effected by constructing the note, &c. "(so far as the parts thereof printed " from engraved plates are concerned) of two subjects, the one of " a primary & the other of a secondary character, & super-" imposing the one subject over the other, and in printing the " same in two different colors, selected with such regard to their " photographic & chemical qualities, that a fraudulent imitation " of the same can be obtained by photographic or anastatic " processes in one color only."

[Printed, 1*s.* 8*d.*]

A.D. 1845, March 27.—N° 10,582.

BROOMAN, RICHARD ARCHIBALD.—The title of this invention is "A thread made from a substance not hitherto applied to that " purpose, & also the application of it to the manufacture of " piece goods, ribbons, paper, & other articles," and when necessary, the gutta-percha, prepared according to process described in the Specification of Patent N° 10,550, is made into threads by a machine described. These are made into goods, and among other things " a paper is made suitable for documents, &c., by " interposing between two sheets of paper pulp threads of gutta-" percha laid crosswise like network," and combining the two sheets by means of the machine for which Patent N° 8342 was granted, " or by any other suitable machinery."

[Printed, 7*d.* See Repertory of Arts, vol. 8 (*enlarged series*), p. 303; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 33; Mechanics' Magazine, *vol. 44, p. 238.*]

A.D. 1845, May 6.—N° 10,653.

BRINDLEY, William.—"Improvements in the manufacture of "trays & various articles of japanners' & other ware made of "pulp," by making of trays and other articles from pulp in moulds, and producing sheets of the thickness desired by using moulds such as are used by millboard makers, but instead of pressing the sheet between felts, it is placed between the moulds suitable for making the article, pressed, and dried with certain precautions.

[Printed, 8*d.* See Repertory of Arts, vol. 6 (*enlarged series*), p. 360; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 349.]

A.D. 1845, July 21.—N° 10,773.

SINCLAIR, John James.—"Certain improvements in producing "glossy substances on paper & similar materials," and these consist in the adaptation, application, or employment of an elastic or slightly yielding medium between the rollers and the paper, &c. and which is named by the patentee the "bedding," and which may or may not "be attached to one of the rollers." Hitherto the sheets of paper have been placed between copperplates, and passed through rollers without the "bedding." Six different modes of carrying out this invention are detailed, but the patentee does not confine himself "to these plans, as others may be devised."

[Printed, 10*d.* See London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 78.]

A.D. 1845, July 21.—N° 10,774.

WILLIAMS, Thomas Robinson.—"An improved process & "machinery for rendering paper & wrappers waterproof;" and this is effected by coating the paper or fabrics with a bituminous, resinous, or gummy, &c. material which is dissolved by heat alone, and bringing the coated surfaces into contact, and pressing the same by rollers, &c.

[Printed, 10*d.*]

A.D. 1845, November 11.—N° 10,935.

BIELEFELD, Charles Frederick.—"Improvements in the "manufacture of embossed or pressed paper, calico, leather, & "other fabrics & articles," and these are said to consist of three, namely,—

First, manufacturing mouldings from paper, calico, and other woven fabrics, and from suitable preparations of fibrous materials in a plastic state, and also from leather combined with other matters by the employment of rollers, as described.

Second, using woven fabrics when combined with paper, papier mâché, or other plastic preparation of fibre in the manufacture of mouldings and embossed articles similar to papier mâché; and applying papier mâché, &c., in giving extra thicknesses to certain parts of the article to obtain strength and stiffness, and this it is stated "is applicable when making articles of thick paper."

Third, applying india-rubber, combined with glue treacle, glycerine, or gluten, in preparing plastic matters of fibrous materials when made into articles, by pressing in moulds or embossing by rollers, as described above, "or combined with paper, " leather, calico, or other woven fabric."

[Printed, 4*d*. See Repertory of Arts, vol. 7 (*enlarged series*), p. 352; Patent Journal, vol. 1, p. 63.]

A.D. 1845, December 10.—N° 10,996.

DOWSE, Charles.—"An improved paper or material."

[No Specification enrolled.]

A.D. 1846, January 29.—N° 11,063.

COWAN, Charles.—"Improvements in the manufacture of " paper, millboard, & other similar substances," and these are five in number, as follows:—

First.—To supply an uniform quantity of pulp to the wire cloth according to the thickness of the paper desired, and depending in part upon the speed of the machine; "a mode of arranging " mechanical apparatus into a regulator working by means of a " bucket" is described.

Second.— Constructing deckles, so that " they are rendered " fixed or motionless when the machine is in action."

Third.—Making millboard, button-board, or such articles by repeatedly applying fresh surfaces of green or uncouched paper to the surface of previously made yet damp paper. The paper is reeled, and instead of being dried, the reel with the paper is placed near the couching rollers, and in such a position that the paper is drawn through them with a fresh surface of pulp or green paper, and this is received upon a reel, and the reel brought near the couching rollers as before, and this may be repeated as often as required.

Fourth.—" A mode of separating the water from half-stuff before " bleaching " and " applying bleaching & souring liquor, & expressing the same." The stuff is caused to flow upon an endless wire cloth of a certain fineness, and passed through two pressing rollers, " the water is thereby pressed out ;" afterwards it is passed through a solution of chloride of lime, or through a pair of rollers called bleaching rollers, one of which dips in a vessel containing chloride of lime. Sometimes " when coarse " fibrous materials are used a diluted solution of sulphuric acid " is employed." The souring apparatus is similar in construction to the bleaching apparatus. Before bleaching, the stuff may be partially dried by passing round a drying cylinder. If bleaching by gas is to be applied, the stuff is passed on to a reel or into a box or vessel, " & transferred to a gassing chest."

Fifth.—" The mode of marking paper at intervals by means of " rollers acting at proper times." The marks or impressions are raised on these rollers, and these rollers are attached in juxta position to a drying roller, as is described by diagrams, and impress the paper passing over it. The impressions are regulated by means of a bolt, " which is to be withdrawn and immediately " returned every time an impression is to be given."

[Printed, 10*d.*]

A.D. 1846, March 11.—Nº 11,126.

CALVERT, Frederic Crace.—" Improvements in the preparation of the article called 'jute,' rendering the same suitable " for various useful purposes ;" and these are said to be steeping in water, washing with oleate, stearate, or margarate of potash, passing the fibre into a solution of " chloridic acid " of a certain strength, and afterwards into a like solution of chloride of lime, washing, again steeping in acid, and bleaching by sulphurous acid solution prepared as described, &c.

No mention is made of an application for the jute so treated.

[Printed, 8*d.* See Repertory of Arts, vol. 8 (*enlarged series*), p. 239 ; Patent Journal, vol. 1, p. 270.]

A.D. 1846, May 15.—Nº 11,208.

HANCOCK, Charles.—The title of this invention is " Certain " improvements in the manufacture of gutta-percha & its appli-

" cations, alone and in combination with other substances;" and these improvements and applications are said to be as follows:—

First.—Preparing "gutta-percha for manufacturing purposes;" and, first, slicing it up into pieces, immersing it in an alkaline solution, and afterwards cleansing it by a process described in Specification of Patent N° 11,032, " or by any similar process."

Second.—Giving "shape and configuration to articles to be made " of gutta-percha or its compounds by casting, moulding, pressing, " stamping, & otherwise."

Third.—" Impressing letters, characters, & figures upon sheets," as described. The sheets of gutta-percha prepared are employed for ordinary letter-press printing, but preferring to have it of a light colour, it is mixed with flake white, chalk, or similar substance. The printing is done by passing through the press without inking the type. Engravings are also done by dry contact, &c.

Fourth.—Varnishing or producing a smooth surface on sheets of gutta-percha or its compounds.

Fifth.—Veneering and inlaying sheets of gutta-percha or its compounds.

Sixth.—" Making paper & pasteboard with gutta-percha com- " bined with other materials," and also covering "paper with " gutta-percha in solution or powder." The paper pulp or paper dust is made plastic with gutta-percha, and passed between rollers, &c. Paper may be dusted with fine dust of gutta-percha, and passed through rolls, or paper may be saturated with a solution of gutta-percha, and dried or pressed.

Seventh.—Employing bisulphuret of carbon, solutions of gutta-percha and its compunds, in combination with other substances, in articles of manufacture.

Eighth.—" The combination of stitching & cementing in the " production of various articles of manufacture."

[Printed, 6*d*. See Mechanics' Magazine, vol. 46, pp. 280 and 295; Patent Journal, vol. 2, p. 447.]

A.D. 1846, July 14.—N° 11,289.

BIELEFELD, Charles Frederick.—"Improvements in the " making of moulds or dies used in the manufacture of papier " mâché & other matters, & in moulding or forming articles " from certain plastic materials."

First,—Combining tano-gelatine with gutta-percha and a suitable solvent such as Venice turpentine, with or without other materials, for making dies and moulds, and also for being moulded or formed into articles for architectural and other purposes; also combining sulphur-balsam or gum-thus, or both, with gutta-percha or with tano-gelatine, or with both, with or without other materials, for making dies or moulds, or for being moulded or formed into articles for architectural purposes.

Second, relates to moulding for architectural purposes, and not to the forming moulds for papier mâché.

[Printed, 4*d*. Repertory of Arts, vol. 9 (*enlarged series*), p. 175; Patent Journal, vol. 2, p. 670; Engineers' and Architects' Journal, vol. 10, p. 119.]

A.D. 1846, August 11.—N° 11,329.

DOWSE, CHARLES.—" Improvements in the manufacture of " fabrics applicable as substitutes for paper;" and these may be stated to be, manufacturing woven fabrics in such manner that they may be written upon " with inks ordinarily in use for writing on " paper." The mode of doing this is as follows:—The fabrics, those made of cotton are preferred, are singed and bleached, and if a coloured paper is required, dyed, then saturated with a solution of resin dissolved in alkali, or in place an ordinary soap, or with a mixture of both, next immersed in a solution of alum or alumina, and afterwards passed into a solution of starch or gum, and dried in stoves, &c., and pressed, so as to glaze them like paper. " Solutions of barytis, strontia, lime, or magnesia may be used " in place of or in combination with alum."

[Printed, 3*d*. See Repertory of Arts, vol. 9 (*enlarged series*), p. 307; London Journal (*Newton's*), vol. 30 (*conjoined series*), p. 114; Patent Journal, vol. 2, p. 653.]

A.D. 1846, September 10.—N° 11,369.

POOLE, MOSES.—" Improvements in treating vegetable fibres to " render them applicable to the manufacture of paper."

[No Specification enrolled.]

A.D. 1846, September 24.—N° 11,382.

NEROT, EDMUND.—" Improvements in the manufacture of " paper;" and these improvements consist as follows:—

First.—In a " method of making the bark of the ozier and willow " suitable for making paper;" and the following is a general description of the method:—Trenches are filled with the bark and covered with water, after steeping for some time the water is run off and the stuff crushed under a millstone, afterwards put into a lye vat and heated with steam, then "threshed, in preference by "fullers acting obliquely," and washed, is dried and shaken. "The yarn is fit for manufacturing purposes," and is pulped and mixed with "a fifth or sixth part of coarse rags." In manufacturing white paper, it is bleached by solution of American potash and chloride of lime or "liquid chlore."

Second.—"Improvements in reference to bleached jute," and "application of same to the manufacture of paper." The jute is bleached "by the patented process of Mr. Calvert," N° 11,126, and cut by passing through a chopping machine and washed in a rag engine; "bleach can then be applied in the water." Further bleaching may be required when it is pulped, and alum, size, and blue are added to the admixture. Admixtures of linen or cotton fabrics with the jute are made in certain proportions. "The mode "of treating jute pulp on the machine" in no way differs from the mode of treating other pulps.

[Printed, 4*d*. See Repertory of Arts, vol. 9 (*enlarged series*), p. 301; Patent Journal, vol. 2, p. 736.]

A.D. 1846, October 3.—N° 11,394.

MILLBOURN, SAMUEL.—"Improvements in the manufacture of "paper."

First.—The mode of applying a "revolving reticulate cylinder" to the "engine," "for the purpose of drawing off the water" from the pulp or rag. It should be placed "near to the back-fall."

Second.—Arranging a series of vacuum boxes under the wire web carrying the wet paper or pulp, which act in succession upon the paper as it is made.

Third.—Causing the paper to be passed between a combination of two or more pairs of rollers in succession, "size being continually "brought up to the under side of the paper by the under rollers."

Fourth.—"Conducting paper in a tortuous course through a "drying chamber, divided into compartments heated."

[Printed, 1*s*. 9*d*.]

A.D. 1846, October 3.—N° 11,395.

WOODFULL, HENRY.—"Improvements in paper-making ma-"chinery," and these consist, first, in employing, for drying the paper, double sets of rollers, mounted and revolving horizontally, and having "accommodation" or "dancing" rollers, and picking and brushing rollers, interposed between every two of the sets.

Second.—A modification of the above apparatus, in which each set of the drying rollers have their bearings in the opposite ends of balance or oscillating levers, which renders the employment of separate "accommodation" or "dancing" rollers unnecessary.

Third.—"The combination of the said drying apparatus according to either of the" "forms of construction, with cutting "rollers," whereby "the paper is immediately carried under a "series of circular cutters," "which divide it longitudinally into "pieces of any required widths."

[Printed, 9*d*. See Repertory of Arts, vol. 9 (*enlarged series*), p. 284.]

A.D. 1846, October 15.—N° 11,417.

DONKIN, John.—The title of this invention is "Improvements "in the manufacture of paper, or in the machinery employed "therein, & in the process of bleaching paper, linen, & other "manufactures in which chloride of lime is employed;" and these consist in employing, when chloride of lime has been used for bleaching paper pulp, or other fabric or material, a chemical agent which will free the pulp, &c., from chloride of lime by decomposing it, the new substances produced not being injurious to the articles which have been bleached. The chemical agent "is usually "called by chemists bisulphite of soda, and although sulphite of "soda will decompose chloride of lime, yet it will not produce so "beneficial an effect as the bisulphite of soda." Two processes are given for making the bisulphite of soda, these only produce sulphite of soda, but the patentee says he does not confine himself "to the use of bisulphite of soda made by these methods "or either of them."

The title of this invention was altered by a Disclaimer in March 1847 to "Improvements in the manufacture of paper, and in the "process of bleaching linen and other manufactures, in which "chloride of lime is employed."

[Printed, 4*d*.]

A.D. 1847, April 24.—N° 11,670.

JENNENS, Theodore Hyla.—The title of this invention is "An improved method or improved methods of manufacturing "papier mâché articles, also a new or improved method of orna-"menting papier mâché articles, which said method of orna-

"menting papier mâché articles is also applicable for ornamenting "purposes generally;" and, first, treating or preparing "panel" by applying steam to it so as to render it soft and pliable, so that it may be either pressed flat so as to make it stronger and more compact "panel," or moulded into any required form; also constructing moulds for making "blanks" in such a form so that when separated from each other to a distance equal to the thickness of the "blank" to be produced, the distance between all those parts of the moulds which are opposed to each other shall be the same; the "blank" produced by such moulds or dies will consequently be equally thick in every part.

Second.—Ornamenting papier mâché, &c., consists in applying glass, gems, jewels, &c.

[Printed, 9*d*. See Patent Journal, vol. 3, p. 529.]

A.D. 1847, August 5.—N° 11,833.

BROADBENT, WILLIAM.—"Improvements in the manufacture "of paper;" and these consist in employing the steam after it has passed through the drying cylinders in the paper machine so as to produce the vacuum under the wire cloth web for the purpose of obtaining the atmospheric pressure upon the wet pulp upon that part of the web, and so press out the water from the pulp. The vacuum chamber is the same as in an ordinary machine, but in place of a pipe leading to the air pumps or exhausting fans, a pipe is led into the open air, and the steam from the cylinders is led into this pipe, which has a "a valve or cock to allow of the rush of "steam through the outer end thereof being regulated."

[Printed, 3*d*. See Repertory of Arts, vol. 11 (*enlarged series*), p. 119; Patent Journal, vol. 4, p. 242.]

A.D. 1847, September 23.—N° 11,871.

DICKINSON, JOHN.—"Certain improvements in the manu-"facture of paper."

First.—Altering the mode of making "double plate paper, described by the patentee in the Specification of Patent N° 6008. In that mode the side of the paper which was in contact with the wired surface of the last of the hollow revolving cylinders on which the double paper is made was subsequently brought into contact with the metallic surface of the upper roll of the last pair of press rolls, by which the water is squeezed out. Now, this improvement "consists in reversing that mode, and bringing the opposite

" side of the paper into contact with the metallic surface of this " press roll." The result is a more delicate paper for engravings.

Second.—Forming plate paper of three thicknesses, and this is effected by having a reel fitted or covered with a long length of damp paper made and wound off at a different machine. The end of this paper is led into contact with a wet double paper, being made and carried with it through the press rollers, &c.

Third.—Applying exhausted air troughs underneath the felt, having the wet paper upon it, so as to cause "a slight atmospheric " pressure on the surface of the wet paper." "This trough has a " pipe from the bottom of it, communicating with a pair of " double-acting air pumps."

[Printed, 1*s*. See Patent Journal, vol. 4, p. 501.]

A.D. 1847, November 11.—N° 11,958.

SALMEN, Samuel.—The title of this invention is "Certain " improvements in rendering certain materials applicable as a " substitute for leather, paper, papier mache, & oilcloths in " various articles of manufacture," and this is said to consist in " the manufacture of a material from one or more pieces of cloth " or other suitable fabric, cemented together by the composition " described, or by other similar suitable composition, & after- " wards pressed." The composition described is "composed of " boiled linseed oil, litharge, and umber, or other similar " substances," and sometimes mixed with "gold or silver litharge, " or oxide of lead." No mention is made in the Specification of the applicability of the result of this invention as a substitute for paper, &c.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 32 (*conjoined series*), p. 442.]

A.D. 1848, March 8.—N° 12,084.

DE LA RUE, Warren.—The title of this invention is "Im- " provements in machinery used in the manufacture of cardboard " and pasteboard," and it is stated that hitherto in making cardboard and pasteboard the workman applied paste by a hand brush, and accumulated the sheets into a "pile," and submitted the pile to pressure, and also in some cases cardboard and pasteboard have been made by pasting several webs together on a machine " *before such* webs have been cut up into sheets;" but these improvements consist of modes of arranging machinery for applying paste to sheets of paper, and for facilitating their accumulation in the manufacture of cardboard and pasteboard.

[Printed, 6*s*. See Artizan, vol. 7, p. 14; Patent Journal, vol. 5, p. 428.]

A.D. 1848, June 6.—N° 12,175.

BRINDLEY, William.—"Improvements in the manufacture of papier mâché," and these are said to consist of three.

First.—"Producing ornamental & other surfaces in relief on trays & other articles of papier maché," and this is effected by employing moulds with sunk or hollow parts, according to design, when the sheet of pulp is compressed between the moulds, one or both of which having recesses in pattern, these will produce the article of papier maché with surfaces in relief." The moulds are made of metal, and may be "made of papier maché rendered hard by oil and by drying."

Second.—"Manufacturing hollow articles of papier maché, such as basons for holding water, so as to produce wash-hand basons suitable for camp furniture," &c., and this is effected by causing sheets of pulp to be pressed between two moulds, and in place of japanning, by preference painting the inside with white paint, and subjecting the same to a temperature of "200° Fahrenheit till the smell of paint is gone."

Third.—"Making hats of papier maché," applying a like means of operation as in making basons.

[Printed, 3*d*. See Repertory of Arts, vol. 13 (*enlarged series*), p. 43; London Journal (*Newton's*), vol. 34 (*conjoined series*), p. 18; Mechanics' Magazine, vol. 49, p. 573; Practical Mechanics' Journal, vol. 1, p. 229; Artizan, vol. 7, p. 106; Patent Journal, vol. 6, p. 106; Engineers' and Architects' Journal, vol. 12, p. 55.]

A.D. 1849, February 12.—N° 12,471.

BREWER, William, and SMITH, John.—"Certain improvements in the manufacture of paper & cardboard, & in producing water-marks thereon, & also in the apparatus & machinery used for such purposes;" and these are said to consist of six, as follows:—

First.—"The manufacture of paper and cardboard with water-marks produced by moulds formed in dies," as described, and the following is a general description:—The water-mark or design required is cut and engraved upon a steel die in the ordinary way, and the die hardened is fixed by screws upon a block in a machine like a steam hammer, the engraved face upwards; a thick plate of metal is placed upon the die, or melted metal is poured upon it, the hammer descends, forces the metal into the die, and the hammer having recesses in its face, the metal enters these recesses, and the hammer in its ascent takes the metal from the die, with a cast of the die, and which cast, if not perfect, may be made so by a repetition of blows. A thin plate of metal to form the mould is placed on the die, and the hammer with the cast brought down into the die. This mould plate has now the impression throughout stamped upon it. The back of the mould plate is cut or abraded away by a file, or otherwise, and "placed in a frame upon the "backing becomes a mould for the manufacture of paper."

Second.—Constructing "moulds for the manufacture of paper "having the whole or a portion of their surfaces formed in dies."

Third.—"Constructing moulds" for manufacturing paper "with a backing formed in dies."

Fourth.—Constructing "moulds, for the manufacture of paper "consisting of wove or laid wire, & laid & wove machine dandy "rollers, in connection with designs formed in dies."

Fifth.—Constructing moulds of wove wire pressed into dies or between engraved and raised cylinders.

Sixth.—Adapting moulds and apparatus "described to the machinery employed in the manufacture of paper & cardboard."

[Printed, 1*s.* 7*d.* See Mechanics' Magazine, vol. 51, p. 161; Patent Journal, vol. 8, p. 65.]

A.D. 1849, February 28.—N° 12,494.

BRINDLEY, WILLIAM.—"Improvements in the manufacture of "waterproof paper;" and these consist in oiling paper and submitting it afterwards to a high temperature in a "stove heated "to two hundred degrees to three hundred degrees Fahrenheit." "Paper thus treated may be written on or printed on, & paper- "hangings thus made will be found of great importance."

[Printed, 3*d.* See Repertory of Arts, vol. 11 (*enlarged series*), p. 287; Mechanics' Magazine, vol. 51, p. 213; Patent Journal, vol. 7, p. 225; Engineers' and Architects' Journal, vol. 12, p. 373.]

A.D. 1849, November 10.—N° 12,836.

AMOS, CHARLES EDWARDS, and CLARK, MOSES.—"Improve- "ments in the manufacture of paper, & in the apparatus & machinery "used therein, part of which apparatus or machinery is applicable "*for regulating* the pressure of fluids for various purposes."

First.—Employing in place of the common upper couch roll, a hollow roll, perforated on its surface, and having a suction box within the inside acted upon by an air pump, so as to draw off the water from the upper side of the paper, by which the colour of the paper, "where Smalts ultramarine or other colors are "used," is kept of an equal tint throughout.

Second.—"An improved knotter or pulp strainer. The sieve plate or knotter may be made in the usual manner, but with arrangements that a partial vacuum and plenum is alternately produced beneath the sieve plates by the rising and falling of the clapper boards.

Third.—Regulating the supply of steam to the drying cylinders of paper machinery by means of a valve peculiarly constructed and arranged; also regulating the pressure of fluids generally by the same means.

Fourth.—Conducting machine-sized paper through cold water after being dried or partially dried; also passing the paper partially round a hollow cylinder through which a stream of water flows, "by which means the heat in the paper is carried off, & the "paper is rendered more tractible & in a proper state for under-"going the glazing operation."

Fifth.—An "improved paper-cutting machine," which has for its object, first, the conveying the paper to the cutters by means of a reciprocating gathering drum, and rising and falling rolls; and, second, preventing the paper from being drawn back by the return motion of a certain drum, and of presenting it to the action of the cutters to be divided into sheets.

Sixth.—Glazing paper by employing a "traversing horizontal "table in conjunction with two or more pairs of rolls."

[Printed, 1*s*.3*d*. See London Journal (*Newton's*), vol. 37 (*conjoined series*), p. 1; Mechanics' Magazine, vol. 52, p. 399; Patent Journal, vol. 9, p. 77.]

A.D. 1850, July 10.—N° 13,171.

CRAWFURD, Robert Rumney.—"An improvement in drying "paper," chiefly after it has been sized and in the web, consisting of a series of flat tubes, through which the paper is conducted by tapes, and in passing through which tubes it is subjected to a stream of air, warm preferred, supplied by a fan or other machine.

The plan for drying paper in sheets is by using a series of reels, round which the paper passes by tapes, cords, nets; or reticulate sheets, to conduct it from reel to reel, while air rises against its surface; or instead of reels or drums, cylinders heated by steam may be used, or a single reel or drum of large diameter, or a metallic cylinder heated, "the paper being retained upon its "surface by the endless tapes, cords, nets, or sheets."

[Printed, 1*s*. 8*d*. See Repertory of Arts, vol. 17 (*enlarged series*), p. 152; Mechanics' Magazine, vol. 54, p. 59; Patent Journal, vol. 10, p. 188.]

A.D. 1850, November 2.—N° 13,306.

MATTHEWS, John.—"Improvements in sizing paper;" and these consist in combining machinery whereby endless felts or fabrics are caused to conduct sheets and webs of paper through size contained in a trough or vessel. The paper descends through the size, and is received between two endless felts or fabrics and passes through pressing rollers.

[Printed, 9*d*. See Repertory of Arts, vol. 18 (*enlarged series*), p. 207; Mechanics' Magazine, vol. 54, p. 376; Patent Journal, vol. 11, p. 59.]

A.D. 1850, November 13.—N° 13,375.

BANCKS, Robert Olddiss.—"Improvements in the manufac-"ture of paper;" and these are in "the adaptation of marks or "devices pierced or cut from plates of metal or other suitable sub "stance by saws or other instruments." The device or design on paper is affixed to plates and "cut out by a saw adapted for the "purpose, after the manner of cutting buhl work, & attached to "the dandy roller or mould by sewing with wire or by solder."

[Printed, 4*d*. See London Journal (*Newton's*), vol. 39 (*conjoined series*), p. 436; Mechanics' Magazine, vol. 54, p. 456; Patent Journal, vol. 11, p. 149.]

A.D. 1851, February 24.—N° 13,521.

STONES, William.—The title of this invention is "Improve-"ments in the manufacture of safety paper for bankers' cheques, "bills of exchange, & other like purposes," and these improvements consist in the application and use of iodine (or bromine) in its combined state with a base, and ferrocyanide (or ferricyanide) of potassium and of starch combined in paper. In preference, iodide of potassium is mixed with the pulp or size, or the paper may be saturated with a solution of the metallic iodide. The ferrocyanide is mixed with the size, in preference to applying it afterwards. The starch is mixed with the pulp in the engine, in preference to using it in an after stage of the process. On applying *re-agents to dissolve* out the ink in paper containing these ingredients a decomposition takes place, and iodide of starch is formed of a dark colour, and Prussian blue will become diffused over the adjacent portion of the paper.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 39 (*conjoined series*), p. 339; Mechanics' Magazine, vol. 55, p. 177; Patent Journal, vol. 11, p. 256.]

A.D. 1851, February 24.—N° 13,531.

BIELEFELD, Charles Frederick.—"Improvements in the "manufacture of sheets of papier maché, or substances in the "nature thereof;" and these consist in "rolling or pressing fibrous "& other matters ground" finely "into the state of stiff putty or "dough into sheets, & the treating such sheets with oil & heat." The composition of the paste or dough preferred is as follows, namely, water, flour, alum, coperas, rosin, boiled oil, litharge, rag dust, or other suitable fibre, and these are mixed in certain ways and proportions, &c.

[Printed, 4*d*. See Repertory of Arts, vol. 18 (*enlarged series*), p. 327; London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 21; Mechanics' Magazine, vol. 55, p. 195; Patent Journal, vol. 11, p. 264.]

A.D. 1851, April 26.—N° 13,603.

HADDAN, John Coope.—The title of this invention is "Im"provements in the permanent way of railways, in railway & "other carriages, & in the manufacture of papier mâché, to be "used in making carriages & other articles;" and after giving a description of the improvements contemplated by the first part of the title, the patentee states his improvement in the manufacture of papier maché to consist in "sticking together or com"bining several layers of paper or other suitable material by "means of Jeffrey's marine glue, or other similar or analogous "waterproofing material, so as to form panels to be used in "making carriages & other articles."

[Printed, 1*s*. 7*d*. See Mechanics' Magazine, vol. 55, p. 377; Patent Journal, vol. 12, p. 60.]

A.D. 1851, August 14.—N° 13,717.

GLYNN, Henry, and APPEL, Rudolph.—"Improvements in "the manufacture or treatment of paper or fabrics to prevent copies "or impressions being taken of any writing or printing thereon;" and this is effected by mixing in the pulp a certain quantity of *a salt of copper*, "nitrate or sulphate" preferred, afterwards adding to same "an alkali or alkaline salt," to produce a cuprous precipitate. Phosphate of soda is preferred. The pulp is then washed, and made into paper, and before sizing is dipped into a saponaceous solution described, or the size without alum may be added to the soap solution, "or the soap solution may be com- "bined with the pulp." When the destruction of the document is not required, and when it is only sought to prevent a transfer being taken, "the soap solution may be used alone without the "copper." In treating paper or fabrics so as to prevent a transfer being taken, they are soaked in a saturated solution of sulphate of copper, dipped in a solution of alkali or alkaline salt, washed, dried, and "dipped in the soap solution."

[Printed, 3*d*. See Repertory of Arts, vol. 19 (*enlarged series*), p. 354; London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 197; Mechanics' Magazine, vol. 56, p. 176.]

A.D. 1851, October 16.—N° 13,778.

LIGHTFOOT, Thomas.—"Improvements in machinery appli- "cable to the manufacture of paper;" and these relate to the machinery in which rags are reduced to pulp; and, first, "employing "two rolls in the rag engine, one of which" "is driven at a speed "superior to the other."

Second.—Making the sides and bottom of the vat and mid-feather hollow, and also arrangements whereby the dirty water is carried off from the engine, and the flow of the same "periodically "interrupted, so as to prevent the pulp from being sucked "through the straining surfaces."

[Printed, 1*s*. Mechanics' Magazine, vol. 56, p. 330.]

A.D. 1851, December 17.—N° 13,861.

SOUTER, James, and WORTON, James.—"Improvements in "the manufacture of papier maché, and in articles made there- "from, and in the manufacture of buttons, studs, and other "articles where metal and glass are combined;" and these improvements are four in number. First, causing papier maché, before oiling, &c., to be coated with lampblack, white lead, flake white, or such like materials, by means of paste, such as is used by bookbinders, when it is dried, pressed into the form required, "dipped in oil, and treated as heretofore." Second, making perforated buttons by punching them from sheets of papier mâché by the machinery described, and if pulp is employed, the water is strained from the mass, and portions of it are put into "dies which have wire cloth at the bottom, made concave on the "interior, so as to produce a convex blank;" punches with concave ends are made to "press the wet mass to the bottoms of "the moulds or dies, the water getting freely away." These blanks are finished by oiling, &c. Third, inlaying perforated papier maché buttons with shell or metal. Fourth, manufacturing buttons, studs, &c. by combining metal and glass.

[Printed, 9*d*. See Repertory of Arts, vol. 20 (*enlarged series*), p. 166; Mechanics' Magazine, vol. 56, p. 510.]

A.D. 1852, January 13.—N° 13,896.

FARINA, Jean Antoine.—"A process for manufacturing "paper;" and this consists, first, in preparing pulp from the plant called "spartum," or "winter broom," for paper by barking or stripping, steeping, crushing, washing, carding, bleaching, washing, &c., as described.

Second.—Employing "American or other potass in the preparation of pulp from spartum" by steeping.

Third.—Employing nitric acid in preparing "pulp from spartum" in washing and bleaching.

[Printed, 4*d*. See London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 334; Mechanics' Magazine, vol. 57, p. 77.]

A.D. 1852, February 14.—N° 13,973.

CALLEN, Arthur Wellington, and ONIONS, John.—The title of this invention is "Certain improvements in the manufacture "of certain parts of machinery used in paper making, and in the "material employed therein, (which material is also applicable to "the construction) of certain parts of railways, railway and other "carriages (and other similar and useful purposes,)" and these are said to consist of three, as follows:—

First.—Casting metallic bars and plates employed in pulping rags in the manufacture of paper in cast malleable iron from the hæmatite ore, as also the glossing or finishing paper rolls "of cast "malleable iron."

Second.—Casting railway chairs, &c. from hæmatite ore or in malleable iron.

Third.—Casting railway carriage and other bearings in malleable iron.

[Printed, 3*d*. See London Journal (*Newton's*), vol. 42 (*conjoined series*), p. 209; Mechanics' Magazine, vol. 57, p. 178.]

A.D. 1852, February 23.—Nº 13,979.

COUPIER, JEAN THEODORE, and MELLIER, MARIE AMEDÉE CHARLES. — "Certain improvements in the manu- "facture of paper;" and these are said to be two in number,—

First.—"Reducing vegetable matters into pulp by means of a "solution of hydrate of soda or potash," and afterwards bleaching by hypochlorites of alumina or "hypochlorites." The vegetable matters named are straw, and barks of some trees, as willow, osier, chestnut, flax, waste cotton, waste tows of hemp, jute, or surate.

Second. — The mode described of employing nitric acid in manufacturing pulp from woods reduced to shavings; these woods may be pine, beech, ash, elm.

[Printed, 4*d*. See Repertory of Arts, vol. 21 (*enlarged series*), p. 109; London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 338; Mechanics' Magazine, vol. 57, p. 198.]

A.D. 1852, May 1.—Nº 14,112.

SIEBE, AUGUSTUS.—"Improvements in machinery for manu- "facturing paper;" and these consist as follows:—

First.—Constructing "a sieve or pulp strainer formed by rings;" these rings are held together by vertical rods, and in order to form passages for the pulp between the several rings, thin collars or washers are to be put upon all the vertical rods between the rings before they are screwed up tight. On the thickness of these washers depend the width of the spaces, and consequently the fineness or otherwise of the sieve.

Second.—The above sieve or pulp strainer with vibratory fans with vanes, by the movements of which the pulp will be driven by centrifugal force through the narrow spaces between the rings.

Third.—Employing "endless metallic bands, between which "paper may be passed under pressing rollers to be pressed or "glazed."

[Printed, 10*d*. See London Journal (*Newton's*), vol 42 (*conjoined series*), p. 96; Mechanics' Magazine, vol. 57, p. 415.]

A.D. 1852, May 22.—Nº 14,131.

BROWN, JOHN HARCOURT, and MACINTOSH, JOHN.—"Im- "provements in the manufacture of paper and articles of paper;" and these consist in the modes described of manufacturing paper and articles of paper, whereby hollow moulds or frames with permeable surfaces are employed, and within which moulds or frames a partial vacuum is obtained when making paper and articles of paper. For instance, a conical form or mould for making paper of a conical shape, a flat frame suitable for making flat bags, &c.; these generally have a covering of felt upon which the paper is made, and may be withdrawn from the mould with the paper made upon it. But articles "of paper may be made flat & of various "forms" upon a similar principle.

[Printed, 1*s.* 1*d.* See Repertory of Arts, vol. 21 (*enlarged series*), p. 32; Mechanics' Magazine, vol. 57, p. 457.]

A.D. 1852, July 15.—N° 14,244.

POWNALL, Charles James. — "Improvements in the treat"ment and preparation of flax and other similar fibrous "vegetable substances," and which, it is said, may be used in the "manufacture of many textile fabrics, and for other purposes." These improvements are said to consist in subjecting such substances to repeated mechanical pressure and the action of a stream of water, "to wash away their resinous or gummy matters," and the machine preferred "for this purpose is made upon the well"known principle of the tuck or fulling mill," &c.

[Printed, 3*d.* See Mechanics' Magazine, vol. 58, p. 136.]

A.D. 1852, July 20.—N° 14,229.

MAY, Stribblehill Norwood.—The title of this invention is "Improvements in the manufacture of thread, yarn, & "various textile fabrics from certain fibrous matters," and these consist in manufacturing from the fibre or fibres of the various textile and fibrous, exotic, and other plants, such as the banana, plantain of every kind and variety, aloe, penguin, vacois, rajmar, and all textile plants or trees indigenous to a tropical climate "thread or yarn of all kind of articles" "that are or can be made "of silk, wool, linen, or other similar fabrics, also paper & other "like substances," by crushing, combing, scraping, and brushing, washing in water and drying, immersing in a solution of alum, muriate of ammonia, and salt water, or any other suitable solution. When for making into paper the fibre is reduced to a pulp, and when white paper is required, the fibre is steeped in a solution of quick lime, soda, and water, &c. The pulp may be used in conjunction with rags.

[Printed, 3*d.* See Mechanics' Magazine, vol. 58, p. 98.]

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A.D. 1852, October 1.—N° 113.

HARCZYK, Bernhard.—"An improved preparation or composition of colouring matter to be used in washing or bleaching "linen and other washable fabrics, and in the manufacture of "paper and other substances."

This preparation is made by dissolving indigo in sulphuric acid, neutralizing the solution by potash, and "coating with it sheets of "paper, linen rags, or other substances, capable of receiving the "preparation." "It will only be necessary to put a peice of the prepared paper or fabric into the water to impart a blueish tinge to "the water," in which goods are washed or steeped. The colouring matter is innoxious, it may be drunk without danger, and therefore it "may be employed by sugar refiners to whiten their sugar," it may be employed as an ink, "and is also applicable to the manufacture of paper when a fine light blue tinge is required."

[Printed, 3½d.]

A.D. 1852, October 11.—N° 330.

MOORHOUSE, Henry.—"Improvements in machinery or "apparatus for cleaning woollen, cotton, or linen rags and waste, "which machinery or apparatus is applicable to cleaning and tempering clay or other similar purposes." These improvements consist of a grated or wire cylinder, with a central shaft through it but not attached; each, namely, shaft and cylinder, revolving independently. On the shaft are arms or projections at right angles with each other; on one arm a brush is fixed, and on the opposite arm a piece of card. There are a number of longitudinal shelves arranged in the cylinder, and "as the shaft and cylinder "revolve, the ends of the beaters, with the brush and card," sweep "the shelves of any of the material that might lodge there." "When the material requires washing, as rags, for instance, a "trough is fixed under the machine for water," &c.

It is not stated that materials subjected to this arrangement of apparatus are applicable to any particular manufacture. The materials named are, "woollen, cotton, or linen rags and waste "wool, flax, hair, flock, feathers, beaver, hare, and rabbits wool, "and other similar materials."

[Printed, 8½*d.*]

A.D. 1852, October 12.—N° 355.

WARREN, Peter.—"An improved material applicable to many "purposes for which papier machié and gutta percha have been or "may be used;" and this is made by taking the straw of any fibrous vegetable substance, cutting and passing it "through a "pair of mill stones, or between crushing rollers," &c., and in some cases applying water or other liquid, hot or cold; next, boiling in alkaline lye, and transferring to a rag engine pulping the same. The pulp partially dried is pressed or rolled into sheets, or moulded into other forms, and dipped in oil, or an oily or "glutinous matter, "and baked in an oven." Pulp from rags and other materials might be combined with the above pulp, but the pulp described is preferred.

[Printed, 2½*d.*]

A.D. 1852, October 13.—N° 360.

LLOYD, George.—Manufacturing "paper from vegetable fibre "obtained from the feces or solid excrement of herb-eating ani- "mals." The animals are fed upon "such vegetable matters as "possess fibres of the greatest strength and finest quality." These are said to be various kinds of grass, but especially the kind called dogstail grass (cynosurus crystatus), the straw or stems, green or dry, of the common flax plant (linum usitatissimum). The feces are collected in tanks, digested in water; the liquid drawn off may be used for manure, and the solid, which "consists almost entirely "of vegetable fibre," is pressed, then steamed, digested in water for some days, in which time a fermentation has ensued, "whereby "the destructible tissues have been decomposed, and the pure "vegetable fibre liberated. This is washed, bleached, &c., and "made into paper in the ordinary way."

[Printed, 2½*d.*]

A.D. 1852, November 2.—N° 617.

MACINTOSH, John.—This invention is void, by reason of the *patentee having* neglected to file a Specification in pursuance of the conditions of the Letters Patent. The title is "Improvements in the manufacture of paper." The invention is "causing " pulp to be simultaneously supplied from two or more vats or " vessels, so that the two sides of the paper made may be of " different quality or color," and if more vats "than two are used, " the interior layer may be of different quality" to "the outer " surfaces."

[Printed, 2½*d*.]

A.D. 1852, November 3.—N° 622.

LEY, George William.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the act. The title is " The manufacture of a material to be used for certain purposes " instead of wood, leather, millboard, or oil cloth." The invention consisted "in combining gutta percha with dry peat, or turf dust" in certain proportions, "that is required to form this combination," and it is "formed into sheets, blocks, or other forms by rolling or " pressing."

[Printed, 2½*d*.]

A.D. 1852, November 15.—N° 745.

HOGG, James, Jun.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the act. The title is "Certain " improvements in machinery for producing glazed or smoothed " surfaces on paper & other vegetable fabrics," and a machine for effecting this is described by diagrams. The paper or other vegetable fabric "is introduced between endless sheets of copper " revolving upon cylinders under pressure," "with a motion of a " reciprocating nature and end long to the direction of their axes," and "having also combined a rotary motion from the said endless " sheets of copper passing between them, impelled by" "larger " cylinders which have a purely rotary motion."

[Printed, 6½*d*.]

A.D. 1852, November 22.—N° 816.

NEWTON, William Edward.—"Improvements in the manu" facture of paper," and these consist,—

First, in manufacturing copying paper, "composed of Manilla " fibre, or the equivalent thereof," such as of the cocoa-nut husk, having the contractile property of the Manilla in drying, and which serves to give a sharp outline to the impression, and prevents the ink runing, spreading, or blurring, and the Manilla fibre "is " tempered " by the addition of cotton.

Second, impregnating bibulous paper to be employed for reproducing or copying writing in any convenient way, with a certain mordant, but the plan described is mixing in the pulp a chemical " substance that will not color the paper, & at the same time " will be colored by the contact of ink," and the pulp is afterwards made into paper. The chemical ingredient or mordant preferred is " copperas or sulphate of iron," and certain proportions are given of copperas to pulp, but the quantity and nature of the chemical matter required will depend upon the nature of the ink, &c. in the impression to be copied.

[Printed, 3½*d.*]

A.D. 1852, November 26.—N° 877.

COOK, THOMAS AINSLEY.—" Improvements in bleaching," and these improvements are said to apply " to the bleaching of " rags used in the manufacture of paper," and also " goods where " chlorine is employed as the bleaching agent;" and consist in employing hyposulphite of lime, soda, ammonia, magnesia, potash, or alumina, for the neutralizing any excess of chlorine which may exist in bleaching where chlorine is used.

[Printed 2½*d.*]

A.D. 1852, December 18.—N° 1,102.

WESTERMAN, JOSEPH ALEXANDER.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act.

The title is " Improvements in the carbonization of turf, & the " manufacture of paper & fuel therefrom," and these are said to consist,

First, in solidifying all kinds of turf (partly by mechanical means), thereby rendering it as solid as many of the soft kinds of wood.

Second, carbonizing turf " by exposing it to 'carbonization' in " cast-iron retorts."

Third, producing " paper and posteboard from turf, by sub" mitting it to dividing, sorting, washing, and triturating ope" rations."

[Printed, 2½d.]

A.D. 1852, December 20.—N° 1,111.

WILKINSON, William.—First, manufacturing "paper from "the beards of barley, rye, & other like grain," by steeping them in warm or cold water, mixing them with bone size, or other glutinous matters dissolved in the steeping water; the whole is passed through rollers, and issues in sheets or webs. The paper may be bleached at any stage of the manufacture.

Second, manufacturing pasteboard and substances applicable as veneers, mouldings, and for other like purposes, from the beards of barley, rye, and other like grain, mixed with saw dust, bone dust, and other glutinous matters.

[Printed, 2½*d*.]

1853.

A.D. 1853, February 15.—N° 393.

STIFF, George.—Substituting "lime water for other alkaline "solutions heretofore employed in the maceration of straw, grass, or "other vegetable fibre, or gunny bagging, or hemp bagging, used "to form the pulp or half stuff in the manufacture of paper." The straw, &c. is cut into lengths of about half an inch, and in this state winnowed to separate the knots, and boiled with water. The water run off, and lime water used for steeping the materials in, this is changed for fresh lime water after some time, and before bleaching and pulping the material should be boiled with alkali and washed.

[Printed, 3½*d*.]

A.D. 1853, March 26.—N° 730.

BROOMAN, Richard Archibald.—This invention did not proceed to the great seal. The title was "An improved rag tearing "& separating machine," and the machine is said to consist "of a vessel in which is placed a plate of a slightly concave form, "having on its upper surface a number of small serrated iron "blades or knives placed transverseley, between which, similar "blades or knives mounted like cards upon a cylinder, work; by "the revolution of the cylinder the rags" are "torn and "separated."

[Printed, 2½*d*.]

A.D. 1853, April 6.—N° 829.

JOHNSON, William.—This invention received provisional protection but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of safety paper," and these are said to consist in employing "the rough and irregular surface "produced by the fracture of a piece of cast iron or other brittle "material for giving the" "water mark to paper employed in the "manufacture of bank notes, cheques, coupons, &c. The bar is "broken transversely," and a piece of soft metal, gutta percha or other suitable material" is employed to take from the rough surfaces an impression, and from this a design is obtained and "transferred to the wire cloth on which the paper is made."

[Printed, 2½*d.*]

A.D. 1853, April 19.—N° 941.

BEAUVAIS, Lambert Adolphe.—"Improvements in ma- "chinery for obtaining wool, silk, and fibres from fabrics, and "rendering them suitable to be again employed," and these consist of combining two circular revolving surfaces provided with projections or teeth" "rasps or notches." A large tub may be employed the bottom of which is roughend as above; in this tub a frame similarly roughened is made to rotate. The rags are put into this machine "with certain chemical ingredients, such as soda, car- "bonate of soda, potash, lime, and oil, or grease" and the mixture "maintained at a temperature from ninety to a hundred degrees "Fahrenheit by means of" "jets of steam."

[Printed, 5½*d.*]

A.D. 1853, May 13.—N° 1181.

BERTRAM, George.—"Impovements in the manufacture of "paper," and these are in beating and washing rags. First, in the formation of the engine or trough of whatever material composed, with the whole of the internal space open, except that which is occupied by the rollers, so as to admit of a free passage of the material under operation from roller to roller.

Second, "adjusting the plates on which the rags, &c. are to be "reduced to pulp underneath the rollers to their required position "in relation thereto, instead of adjusting the rollers to the "*plates.*"

[Printed, 6½d.]

A.D. 1853, May 21.—N° 1260.

SCOUTETTEN, Henri Joseph.—" An improved plastic com-" pound applicable to various useful and ornamental purposes." This plastic compound may be composed of vegetable and mineral substances, varying according to the purpose for which the article is required. The substances of which it may consist are " gutta percha, " caoutchouc, pitch, resin, wax, gum lac, oxide of iron, golden " sulphur of antimony, ultra marine, chrome, zinc white, &c.," and these substances are to be crushed and fused together in a cauldron and moulded in gutta percha moulds " containing a twentieth " part of caoutchouc " "and compressed in order to produce the " objects required." " This paste may be composed chemically " by dissolving gutta percha, caoutchouc, and pitch in sulphuret of carbon. To render paper or stuffs impermeable, they are treated with a solution made as follows; the gutta purcha or caoutchouc is dissolved in certain quantity in sulphuret of carbon; the solution left to rest for some days; whites of eggs added, and the clear solution drawn off. " The paper rendered impermeable is suitable for photography " as a " substitute for parchment," for "the pre-" serving valuable papers, to prevent falsification, erasures, and the " action of chemical agents."

[Printed, 2½*d.*]

A.D. 1853, June 9.—N° 1413.

MANIERE, Edward.—" Applying asbestos in the manufacture " of paper." To render the asbestos less brittle before reducing it into pulp, as when making other paper, "it is boiled for a given " time, & before making into paper the pulp is mixed with a " certain amount of alum in order to give it more adhesion."

[Printed, 2½*d.*]

A.D. 1853, June 10.—N° 1422.

BROOMAN, Richard Archibald.—Making " paper from wood " & woody fibres reduced to fibrous pulp by means of mechanical " agents acting in the direction of the length or grain of the " " fibres, and parallel thereto," "with water or other suitable liquid " applied," and the arrangement of machinery described, and which it is said effects this. The machinery " consists of a millstone or " millstones, or metal rollers, cylinders or rasps, with roughened " *surfaces, which* are caused to act upon blocks or pieces of wood

" held in a frame always in the direction of the grain thereof," a current of water being directed on to the reducing agent " before " its contact with the wood." " The fibres come from the stones, " rollers, cylinders, or rasps in a state of pulp, and are passed " through seives of different gauges " and " applied to the manu- " facture of different qualities of paper," " or mixed with rag " pulp," and made into paper " by the ordinary processes." " The " wood pulp may be bleached by any ordinary process," or by a solution of carbonate of soda or soda ash, and a solution of alum applied in a certain manner.

[Printed, 6½*d.*]

A.D. 1853, June 15.—N° 1452.

DEHAU, Jules.—Employing the fibres of the stipa tenacissima, " which grows extensively in Africa," " in the manufacture of " woven fabrics, yarn, cordage, ropes, paper, & pasteboard." The manufacture is as follows:—The lower part of the plant being removed, the remainder is boiled for a certain number of hours in water, crushed by rollers while hot, boiled in water with potash, and tallow or grease added, washed in water, dried, " heckled or " combed out." When used for making paper or pasteboard the boiling in tallow may be omitted.

[Printed, 2½*d.*]

A.D. 1853, June 21.—N° 1515.

COWPER, Charles.—The title of this invention is " Improve- " ments in the manufacture of cards, or substitutes for cards, " for the jacquard loom," and these consist in " manufacturing " cards of wood & paper for the above purposes; and, poplar, " pine," or other " soft wood, as free from knots and shakes " as possible, is selected and cut by a machine described " into thin " sheets or shavings." These are immersed in water or a weak solution of glue, and pressed; again dipped in a solution of glue, and again " pressed to remove the excess of glue;" " a sheet of " paper is laid on each side of the wood," and a number of pieces of wood so prepared are laid in a press, and when partially dried " taken out and exposed to the air until dry." The cards are ready for cutting as required.

[Printed, 6½*d.*]

A.D. 1853, July 25.—N° 1746.

COLLINS, James.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Im-" provements in the manufacture of paper;" and these are said to consist "in manufacturing paper from flax or hemp plants."

The plants as they come from the field are dried and cut into suitable lengths, and boiled "in a solution of caustic, soda, " potash, or pearlash, varying in strength as circumstances may " require (but from 2 to 10 Twaddle is generally sufficient)," for a certain time, and "brought into half stuff." It is bleached, or it may be bleached previously to bringing into "half stuff. It " is then finished into paper in the usual way."

[Printed, 2½*d*.]

A.D. 1853, August 2.—N° 1804.

CLARKE, William Henry.—The title of this invention is " Improvements in the manufacture of a composition resembling " 'papier maché' & 'carton pier,' and applicable to the same " purposes to which 'papier maché' & 'carton pier' are applied, " parts of which invention may also be applied to the construction " of ships and boats and roofing;" and these improvements are said to consist,—

First, in the use of peat alone or mixed with other substances generally employed in the manufacture of 'papier maché' 'carton 'pier.'

Second, in scenting or odorising of the material made as above by mixing with it "schale or schistas oil or essence, or of coal tar naptha, or of petrolean or mineral naptha," to prevent the attacks of destructive vermin.

Peat or turf as free from decay as is possible is selected, and either submitted to "careful elutriation" or otherwise, according to whether the article to be made out of it is to be coarse or fine, and "the clean vegetable organic matter resulting" is reduced to a pulp or paste by soaking it for a given time, and in a solution containing given quantities of potash and slacked lime, washing with water, and submitting it to a dilute solution of muriatic acid, after which it is pulped in the ordinary way, and, if necessary, bleached. " From pulp so prepared," "hand" or "machine" paper is *made. When* cardboard, millboard, or papier maché are required, the sheets of paper are united, or the pulp is moulded in suitable moulds. When "sheets or leaves" are required "for light roof-"ing, &c." a certain amount of a solution of caoutchouc or gutta percha and resin is mixed with it, which makes "it to a "great degree waterproof." The said composition is called by the patentee "lignum spagnum," and to which, when it can be procured, will be added "a small proportion of peacerine or "parrifine."

[Printed, 3½d.]

A.D. 1853, August 4.—N° 1823.

CLOUGH, Charles Butler.—The title of this invention is, "Improvements in machinery or apparatus for washing, scouring, "cleaning, or steaming woven fabrics, either in the piece or "garment; also felts or fibrous substances, and corn roots, seeds, "or similar matters," and these are said to consist as follows:—

"First, cleansing goods or materials by injecting or conducting "steam or hot water on them during the revolution of a barrel or "vessel on its axis" in which they are placed.

Second, using a barrel, &c. having a loose roller or rollers, a ball or balls, or a grated or perforated division inside of it.

Third, fixing the barrel, &c. either horizontally or perpendicularly.

Fourth, using a vessel in which is a plunger or plungers acting on the materials in conjunction with steam.

No mention is made of any manufacture to which these goods after cleansing are to be applied.

[Printed, 7½d.]

A.D. 1853, August 5.—N° 1828.

LALLEMAND, Joseph.—"The manufacture of paper from "peat" as follows:—Turf is washed thoroughly, put into a bath of caustic ley, and kept there according to the strength of the ley. The fibres are placed in a bath accidulated with hydrochloric acid, and kept constantly agitated for about four hours. They are next washed, "then subjected to a bath containing a small "quantity of alum," then bleached in a chlorine vat, and mixed with 5 to 10 per cent. of rag pulp, and both pulped together "in "an ordinary pulping engine," and made into paper.

[Printed, 2½d.]

A.D. 1853, August 12.—N° 1885.

BROOMAN, Richard Archibald.—"Certain new compounds "which may be employed for mouldings, frames, and many "purposes to which wood, papier maché, plaster, gutta percha, "& other like substances are applicable;" and these compounds are made as follows:—First, a saturated hot solution of gelatine is mixed with a certain quantity of sawdust, and this is kneaded into balls upon a board by a workman with his hands, and board moistened with a very strong solution of tan, called "oil of tan." When these balls become white they are sufficiently kneaded, and show that "the combination of the gelatine and the sawdust "with the oil of tan has been completely effected," and is ready for various uses. It may be stained by chemical agents, so as to resemble woods.

Compounds may "be produced by the mixture of sawdust or "ligneous or feculent powders with vegetable or animal oils."

Second.—"Mixing sulphate of iron or some other metallic "sulphate with gelatine dissolved in warm water," and thus producing a new compound "insoluble in cold water, spongy, and "having a soft or velvety surface."

[Printed, 3½d.]

A.D. 1853, August 16.—N° 1911.

BROOMAN, Richard Archibald.—The title of this invention is, "A method of & machinery for reducing wood and "other vegetable fibres to pulp, applicable to the manufacture of "paper, pasteboard, millboard, papier maché, mouldings, & other "like purposes," and, first, reducing wood, &c. to pulp by mechanical means acting in direction of the grain thereof, and parallel therewith, or as nearly so as may be, employing at the same time "a stream of water, applied to the reducing agent" before contact with the wood or other vegetable substance.

Second.—Certain machinery to be employed. These consist of a millstone or millstones, or metal rollers, cylinders, or rasps, with roughened surfaces, which are caused to act upon a block or blocks, &c. of wood or other vegetable fibre, held in a frame or frames always in the direction of the grain thereof, & with a current or stream as above. The pulp is passed through sieves, and may be used by itself or "mixed with rag pulp & other ingre-"*dients. It* may be bleached by any ordinary process, or by

" means of a solution of bicarbonate of soda or soda-ash, followed " by a solution of alum."

[Printed, 6½*d.*]

A.D. 1853, August 19.—N° 1942.

WATT, CHARLES, and BURGESS, HUGH.—" Improvements in " disintegrating and pulping vegetable substances," for the manufacture of paper and other fabrics ; and, as an example, chips, shavings of wood, or sawdust are reduced as fine as can be, boiled for some hours in water, and "a stream of sulphurous acid is " passed through the mass till a partial bleaching is effected." " The matters are then well washed, and placed in a solution of " chlorine, chloric or chlorous acid, called also the peroxide & " protoxide of chlorine. The matters are kept in the solution till " quite white, & the fibres disintegrated ;" or chloride of sodium is employed and " decomposed by electric agency." The fibrous mass is heated in a dilute solution of caustic soda or potash.

[Printed, 3½*d.*]

A.D. 1853, August 27.—N° 1986.

BARGNANO, ALEXANDER LOUIS.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is as follows :—" Improvements in the manufacture of paper " and pasteboard," and these are said to consist in using "the " stem or stalk of hemp & flax deprived of its bark, & the " refuse of the bark (which refuse is called in the Italian language " 'capechio,') which cannot be spun or turned into rope, owing to " the coarseness " of fibre. The materials are severally reduced to a paste, and may be used alone or mixed according to the quality of paper or pasteboard required to be made. The materials are reduced to a paste by boiling alone or by soaking in limewater, crushing, grinding, washing, "&, if necessary, bleach them by " means of chloride of potash or hypochloride of alum."

[Printed, 2½*d.*]

A.D. 1853, September 9.—N° 2083.

CHILDS, JAMES.—The title of this invention is, " Improvements " in the manufacture of materials to render them suitable as sub" *stitutes for millboard* & such like uses ;" and these consist in manufacturing " composite boards," by combining very thin sheets of wood of not greater thickness than eighty to the inch, with " sheets of paper or fibrous materials by cement." The " wood, " in some instances, is perforated with numerous holes, and the " grain in the succeeding sheets is placed in different directions." It is stated " that comparatively thin sheets of wood, coated with " paper" on one or both sides, have been known as scale boards, and lately it was proposed to use such " for the cards employed in " jacquard weaving," " but in such cases the wood, though compa- " ratively thin, is too thick to admit of two or more thicknesses with " several thicknesses of paper to make a composite board and yet " retain such a degree of thinness as is desired." The wood may be treated with an acid or alkali, acids harden the woody fibre, &c., alkalies soften the same.

[Printed, 3½d.]

A.D. 1853, September 10.—N° 2089.

WARNER, Arthur.—The title of this invention is, "The appli- " cation of the fibrous parts of the palm tree and leaf to arts and " manufactures ;" and it is stated that the " fibres from the palm " tree and its leaves may be also, by suitable treatment, analogous " to that pursued with other similar fibres when used for the art " of paper making, be brought to a pulpy state and used in the " fabrication of paper, pasteboard, cards, and other like matted " substances."

[Printed, 2½d.]

A.D. 1853, September 14.—N° 2133.

HOOK, Charles Townsend.—" Improvements in the manu- " facture of pulp," and these consist in a novel mode of " distri- " buting chemical solutions " and " water over the surface of the " fibrous material," by forcing them by means of pumps or otherwise through a rotatory tube within a circular vessel containing the fibrous material. The alkaline liquor or water is drawn from the vessel by pumps, and forced through the tube as before. "The " liquor preferred is hydrate of soda" of a certain strength.

[Printed, 3½d.]

A.D. 1853, September 26.—N° 2213.

CLOSSMANN, Francis Frederick.—The title of this invention is "The production and application of certain materials to be em- " ployed in the manufacture of textile fabrics, and for other

“ purposes;” and this is said to be “the application to the manufacture of textile fabrics and of paper of the fibres of all the “ species of malvaceous plants, & especially those under the “ name of ‘althaea officianalis.’” The fibres may be obtained “ by steeping the plants in water, subjecting them to the action of “ steam, or by any other suitable means.”

[Printed, 2½*d.*]

A.D. 1853, September 28.—Nº 2219.

POOLE, Moses.—The title of this invention is “Improvements “ in the manufacture of pulp for paper makers,” and a mode of manufacturing the same from certain vegetable substances is claimed. The substances named are dwarf palm, straw, and other similar substances, and they are submitted to combing, cutting, and passing together with water through a metal mill having teeth which reduce the fibres. The water is now separated from the fibre by a sieve of wire cloth; the pulp is next boiled in water containing an alkaline sulphuret, then treated with acid water washed in ordinary water, squeezed and bleached by a hypochlorite or by a “substance that acts in a similar manner to liberate oxygen “ in its allotropic form.”

[Printed, 9½*d.*]

A.D. 1853, October 25.—Nº 2460.

CURTIS, Alfred, and DONKIN, Bryan, Jun.—The title of this invention is “Improvements in machinery for cutting raggs, rope, “ fibrous, and other substances,” but there is no mention of any purpose to which these substances so cut are to be applied. The improvements are said to consist in “the employment of a knife “ or knives having an alternating motion, and cutting on to a “ plate or surface of iron or other metal set in an elastic bed or “ not, as found desirable.” In some cases the knife is formed “ with one transverse cutting edge, & with one or more cutting “ edges set at an angle to the transverse edge.” “The knife “ or knives is or are moved by a crank or other equivalent contrivance.” The rags, &c. are “fed into the machine by rollers “ or other apparatus, by which the same are advanced a certain “ distance at each stroke or revolution of the crank.”

[Printed, 6½*d.*]

A.D. 1853, November 8.—N° 2588.

ONIONS, John, and BROMHEAD, Samuel.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the act. The title is "Certain improvements in machinery used in the " manufacture of paper & papier maché," and these are said to be "an improved roll or machine for pulping and preparing " rags or other material of which paper and papier mache is or may " be made," by making the plate and knives in one piece instead of making the knives separate, and bolting them together, also, making the knives in segments on the roll diagonally, which causes "the knives of the roll and the bed plate of knives to act " similarly to scissors," "shearing instead of the old principle of " chopping, and enabling the machine to execute its work with" more speed and nicety.

[Printed, 2½*d.*]

A.D. 1853, November 12.—N° 2628.

DE LA RUE, Thomas.—"An improvement in the manufacture " of paper," and this consists in the incorporation of zinc white also known as oxide of zinc, or flowers of zinc, "with pulp in the " process of manufacturing paper." The quantity may vary according to the description of paper required, but the paper is more tender and the water does not flow so readily from the pulp according as the oxide is great or little, and the patentee, consequently, diminishes the speed of the machine and employs a vacuum box before and "after the dandy roller."

[Printed, 2½*d.*]

A.D. 1853, December 6.—N° 2834.

GAINE, William Edward.—"An improvement in treating " paper;" and this consists in immersing or washing paper, in a dry state, in or with sulphuric acid of a certain strength, and washing off the acid in a given time. When it is dried, "great " toughness" is produced.

[Printed, 2½*d.*]

A.D. 1853, December 15.—N° 2909.

VIVIEN, Jacques Pierre Henri.—"Certain improvements " in the manufacture of paper and pasteboard," and these consist in the applying of green, yellow, or dead leaves of all kinds of *trees and shrubs.* They are first compressed, then "steeped &

" lixiviated, either in lime water or in an alcaline solution, such " as of carbonate of soda." "The mass is washed and reduced " into a pulp by any suitable means now in use." "If it is " thought desirable, the leaf pulp may" "be mixed in variable " proportions with pulp made from rags," &c.

[Printed, 2½*d.*]

1854.

A.D. 1854, February 6.—N° 283.

SULLIVAN, THOMAS.—" Certain improvements in rollers and " moulds used in making paper," and these consist in making rollers and moulds, " with interstices or spaces running longi" tudinally, circularly, vertically, or obliquely along, around, or " across," so as to produce lines on the paper.

[Printed, 6*d.*]

A.D. 1854, February 7.—N° 294.

MURDOCH, JAMES.—" An improved process for manufacturing " paper." " This consists of manufacturing paper from a plant " called spartum or water broom," as follows:—

First, submitting the entire plant to " a ley composed of water, " American potash, quicklime, and sulphuric acid."

Second, disposing the platten or bed & teeth of the cylinder " so as to flatten or smooth out the filaments to a lint instead of " cutting them."

Third, "employing a strainer, so as to allow the impurities to " pass off without allowing the filaments to escape."

Fourth, submitting "the tow coming from the cylinder to a flax " carding machine."

Fifth, employing "sulphurous acid to more effectually remove " the chlorine after the last bleaching bath, and before the last " washing."

[Printed, 3*d.*]

A.D. 1854, February 20.—N° 399.

PREVET, RENÉ CHARLES JULES.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "*Improvements* in treating textile plants for obtaining pulp for

" manufacturing paper," and these are said to be " principally ap-" plicable to species of the plant spartium," and plants of the same kind; and these improvements are said to consist of " chemical " and mechanical processes for dressing the plant." In separating the fibre, American potash, salts of soda, lime, and sulphuric acid are employed, and in bleaching it, " nitric and muriatic acids, " chloride of lime, oxide of manganese, alum, carbonate of soda, " & sulphurous oxide," are used. The mechanical apparatus consists of vats, cylindrical hammers, &c.

[Printed, 3*d.*]

A.D. 1854, February 20.—N° 400.

GRAY, Thomas.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, " Improve-" ments in the manufacture of pulp from wood," and these are said to consist of " certain mechanical arrangements " for reducing wood to pulp, namely, a circular metal plate, corrugated or serrated, with teeth somewhat like " to a rasp." This is made to rotate, while another similar plate presses upon the pieces of wood to be ground, and a stream of water passing between the plates, carries the pulpy mass away " as fast as it is formed," and " the " pulp deprived of superfluous moisture is applicable to the manu-" facture of paper, papier maché, moulding, & other purposes."

[Printed, 3*d.*]

A.D. 1854, February 23.—N° 435.

BARLING, Joseph.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Im-" provements in treating the hop bine, and rendering it applicable " to the manufacture of paper, and other articles," and these are said to consist in separating the bark from the " woody centre or " core," and confining the operations to the " bark only." The hop bine is cut into lengths, and steeped " in water only, or in an " alkaline lixivum," or submitted to steam in a steam-tight chest, and crushed so that the bark peels off easy; but it is preferred to boil the bark in lye, as it renders the bark easy to strip from the woody centre, at the same time softening " the gummy or resinous " matter that is in the bark." The bark is further prepared by rubbing, &c., &c.

[Printed, 3*d.*]

A.D. 1854, March 16.—N° 633.

LILLEY, John.—The title of this invention is, "A new material suitable for spinning either alone or combined with other fibres, & suitable to the manufacture of pulp; also certain machinery employed in the preparation thereof;" and this new material is obtained by crushing, &c., "from the heart or core of the plaintain banana and other plants of the same species," and this is passed through a comb, the construction of which is said to be the novelty in the machinery; this is "constructed of numerous strips or thin blades of brass or steel, or other metal, set and held together in a frame."

[Printed, 10*d.*]

A.D. 1854, March 24.—N° 693.

FOTHERGILL, Benjamin, and WEILD, William.—"Improvements in obtaining and preparing the fibres of plantain, penguin, and other vegetable substances, for manufacturing purposes," and an arrangement of machinery is described to be employed, and which, it is stated, is "commonly in use for purposes analagous to those" operations referred to, "with suitable modifications to adapt them to those purposes."

First.—"For cutting the plants into manageable lengths."

Second.—"Splitting the lengths longitudinally."

Third.—"Separating the core and other parts," and this is principally to be employed in making paper.

Fourth.—"Squeezing to extract mucilage," &c.

Fifth.—"Cutting or chopping into suitable lengths."

Sixth.—"Tearing, or cutting and washing, to loosen and separate the fibre."

Seventh.—Boiling in an alkaline solution.

Eighth (if necessary).—Washing.

Ninth.—Extracting moisture.

Tenth.—"Willowing to loosen fibre, and loosen and separate dust," &c.

Eleventh.—"Pressing and boiling."

[Printed, 2*s.*]

A.D. 1854, March 24.—N° 695.

JEYES, John.—"The manufacture of pulp from twitch or couch *grass*," *after* the separation of glutinous, gummy, and other extraneous matters, from the root or plant. The separation of the above matters is said to be effected by steeping, fermenting, &c.

[Printed, 3*d.*]

A.D. 1854, April 5.—Nº 780.

ROSS, George.—"An improved mode of preventing the alteration of bank bills from one denomination to the other," and this consists in indicating the denomination of the bill "five" or "ten," or whatever it may be, by "water lining in the ordinary way, with wire secured to the vellum," "so as to impress the required characters upon the paper," or by raised types upon a cylinder, which is caused to bear upon the web of paper while it is still soft," or the characters may be printed in colours, and sunk into "the body of the paper," by a similar cylinder, having upon its surface points to "penetrate the paper whilst it is yet in a soft pulpy state," "charged with the ink of the required colour."

[Printed, 3*d.*]

A.D. 1854, April 7.—Nº 808.

FONTAINEMOREAU, Peter Armande le Comte de.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Certain improvements in the preparation of photographic paper," and these are said to consist in an apparatus composed of pans with edges perfectly flush, resting on a plate of glass, and a frame with a sliding door, which prevents the light getting to the paper, though "the operation takes place in open day."

[Printed, 3*d.*]

A.D. 1854, April 19.—Nº 902.

JEYES, John.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in the manufacture of pulp suitable for paper making;" and these consist in employing the refuse of tan-yards, converting the tan into pulp by washing, treating it with alkaline leys, bleaching, and pulping; it may be employed alone, "or mixed with rag or other pulp for the manufacture of paper."

[Printed, 3d.]

A.D. 1854, April 22.—N° 926.

HARLOW, John.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Improve-" ments in the manufacture of paper, pasteboard, and millboard," and these are said to consist in introducing and pasting or otherwise attaching between two or more sheets of paper, pasteboard, or millboard one or more sheets or layers of suitable woven fabric. When the manufacture is required to resist the effects of weather and admit of the surface being written on with black lead pencil, without the fear of its being effaced, it is coated either on one or both sides with a composition which may be composed of gold size, turpentine, and white lead."

[Printed, 3*d*.]

A.D. 1854, April 25.—N° 945.

DE BEAUREGARD, Felix Alexandre Testud.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Certain improvements in the manu-" facture of inks, and in the preparation of papers for receiving " the same," and this consists in, instead of employing a coloured ink or pigment on an unprepared paper. The paper is prepared with one of the ingredients of the ink and the writing is done with the other ingredient. As an example, paper is prepared by adding to the pulp or otherwise ferro or ferricyniad of potassium, and " chloride of iron mixed with phosphoric acid and a little gum " arabic, forms a colorless ink." An ink which is almost colorless, but becomes black when written with upon ordinary paper, is made by dissolving iodide of potasium and iodine in water, adding red chromate of potash and as much cyanide of potasium as will decolorize it.

[Printed, 3*d*.]

A.D. 1854, April 27.—N° 960.

BARLING, Joseph.—" Improvements in treating the hop bine " and rendering it applicable to the manufacture of paper and " other articles," and these improvements are said to consist, first, in " particular treatment as to sorting, packing, and storeing," for fitting it " to be operated on for making a material fit to be con-" verted into yarn, cordage, or for other textile purposes;"

Second, using the bine or stalk "for making a material to make "into paper, card, millboard, or other kinds of boards," and "dissolving the gummy, mucilaginous, or resinous matter in the "said bine" by means of caustic alkali, mild alkali, or by means of any combination of alkali, or by "alkaline sulphurets," or "alkali & fatty, oily, or other matters known as soft soap," or by any other means.

[Printed, 5*d.*]

A.D. 1854, April 28.—N° 964.

EVANS, John.—The title of this invention is "A new manufac- "ture of paper," and this is said to be treating the waste refuse of the so-called Brazillian grass (arising from the manufacture of that material into plait or plaited hats) in the "following manner, "namely, removing the ligneous parts, boiling the remainder with "lime water for a given time, washing in a rag engine and "breaking-in in same, & if for brown paper reducing at once to "pulp & converting to paper by the ordinary processes; but an "admixture of rags or stronger materials" with the Brazilian grass waste is preferred.

In making white paper, the waste after washing and breaking is boiled for twelve hours with a solution of soda, washed, pressed, passed through a screening machine or devil, & bleached by exposing to chlorine gas or steeping "in solution of chloride of "lime, or by both processes in succession." After bleaching it is washed in a rag engine and "converted into pulp and made into "paper by the usual processes." In this case an admixture of rags or other ordinary materials of from 25 to 50 per cent. is preferred.

[Printed, 3*d.*]

A.D. 1854, May 2.—N° 979.

JACKSON, Thomas.—"Improvements in the manufacture of "paper from flax, hemp, jute, Indian grass, & other fibrous vege- "table substances, or the tow produced from such fibrous sub- "stances," and these are said to consist in taking "flax, straw, or "other fibrous substance in a dry state," "& where necessary break "or scrutch the same, & cut it into short lengths, & boil the fibre "thus prepared in pure soft water, & afterwards in a solution of "caustic alkali of a certain strength for a certain number of hours "press it, & repeatedly subject it to a stream of water according

" to means described in the specification of Patent N° 14,224 to " remove the glutinous matter. The fibrous vegetable substance " is next steeped in dilute hydrochloric acid of a certain strength, " & for a given time, and bleached," either by the direct action " of chlorine gas, or by a solution of hypochlorite of lime, as " employed when bleaching yarns for weaving purposes."

[Printed, 3*d.*]

A.D. 1854, May 2.—N° 987.

DIÉ, Guillaume.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, " Certain improvements in the manufacture of tracing cloths & " tracing paper," and these improvements are said to consist as follows:—Callendering the material, then immersing it in a " solu- " tion of lichen, starch, & alum, & afterwards passing it through a " compound consisting of lavender essence, gum copal, sperma- " cetti, stearine, boiled linseed or siccative oil, Venetian turpentine, " solution of gutta percha in carbonic essence, litharge, common " turpentine, carbonate of soda " in certain proportions, and callendering again.

[Printed, 3*d.*]

A.D. 1854, May 9.—N° 1038.

HORSFORD, Eben Norton.—"The removal of chlorine from " substances & fabrics." This removal is to be effected by an article which the patentee denominates "antichloride of lime," and when employed " for removing chlorine from bleached half stuff " in paper manufactured, it is to be added directly to the contents " of the engine " " until the presence of free chlorine is no longer " present." The article is prepared by passing sulphurous acid into milk of lime, and the mode of preparation, &c. is described. It is stated that "bisulphite of soda has been employed" for the above purpose, "but this article must be retained in the liquid " form, is comparatively expensive, inconvenient of transportation, " & offensive to use."

[Printed, 3*d.*]

A.D. 1854, May 12.—N° 1060.

HOLT, Thomas Littleton, and FORSTER, William *Charlton*.—*This* invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Making "paper," and this is to be done by taking the refuse tan and dry it, and mix it with "refuse cocoa nut fibre & old rope or rags in "equal parts, and make the whole into pulp in a beating engine," and make into paper.

[Printed, 3*d.*]

A.D. 1854, May 29.—N° 1186.

EVANS, JOHN.—"Improvements in the manufacture of ornamental paper & paper bands;" and these improvements are, first, manufacturing "by suitable machinery ornamental paper, "containing within its substance lace or other open textile fabric, "introduced at the time of its formation from the pulp." "The "description of paper-making machine" employed "is that "known as the cylinder or air paper machine, which was the "subject of Letters Patent formerly granted to John Dickinson."

Second.—"Manufacturing ornamental paper by subjecting "coloured or enamelled paper to pressure between metallic surfaces while in contact with lace or other ornamental fabric."

The third is said to be "the application to the manufacture of "bands of paper with which bobbin net lace or other textile "fabric was incorporated at the time of its manufacture from "pulp."

[Printed, 7*d.*]

A.D. 1854, June 20.—N° 1341.

ACLAND, JAMES.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of paper;" and these improvements are said to be, first, separating "the fibrous portion of the "roots of potato, parsnip, turnip, the roots, stems, & stalks of "mangold wurzle, chicory, & rhubarb."

Second.—Comminuting, "cleansing, & bleaching of such vegetable fibre singly or in combination."

Third.—Applying the pulp thus obtained alone or mixed "with "rag pulp in the manufacture of paper."

[Printed, 3*d.*]

A.D. 1854, June 20.—N° 1342.

HOLT, THOMAS LITTLETON, and FORSTER, WILLIAM CHARLTON.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Making "paper" by taking clover, the hop stem or hop bine, Italian rye grass, either "alone, together, or combined with old rope or rags, "and pulping them, & making them into paper in the usual way "that ropes or rags are manufactured into paper."

[Printed, 3*d.*]

A.D. 1854, June 24.—N° 1393.

LIGHTBOWN, HENRY.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in drying pulp in the manufacture of paper, also "paper hangings, & printed textile fabrics," and these improvements are said to consist in causing the materials "to pass over a "plate or series of plates or chambers heated by jets of gas." The apparatus may be attached or separate from the paper-making or printing machine. The materials are made to travel quick or slow as the drying is required, and the heating of the plates is regulated "by consuming more or less gas."

[Printed, 3*d.*]

A.D. 1854, July 8.—N° 1505.

SINCLAIR, THE HONOURABLE JAMES, commonly called LORD BERRIEDALE.—"Improvements in the manufacture of paper & in "the production of textile materials;" and these improvements are "the application & use of the thistle plant or plants in the "production of fibrous materials for the manufacture of paper "& of textile fabrics." The processes are such as are now employed for the production of pulp and paper, and the fibres are "treated according to existing textile processes." The mucilaginous or gummy matter dislodged in the process of obtaining the fibres may be "applied in the manufacture of gum" or other such purposes.

[Printed, 3*d.*]

A.D. 1854, July 10.—Nº 1511.

SWINDELLS, Israel.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the treatment of wood & vegetable matters "for the production of vegetable fibres;" and these improvemenfs are said to consist in producing vegetable fibre "capable of "being spun & woven," "and particularly suitable to the "manufacture of paper." First, by digesting wood, "such as "waste cuttings of timber, lopings of trees, dyer's waste wood or "spent wood, underwood, weeds, or vegetable matters" in caustic alkali, the strength of which depends upon the materials to be operated upon. Heat may be employed to accelerate the action.

Second, heating the materials under steam pressure with less alkali, with tender plants steam pressure alone without alkali is employed, and the juices, oils, &c., extracted are made "into "manures or carbonaceous matters."

Third, "applying an acid after the alkaline process" to "some "of the more hardy woody matters."

Lastly, recovering the alkali used in the process.

[Printed, 3*d.*]

A.D. 1854, July 18.—Nº 1575.

ARCHER, Charles Maybury.—This invention did not proceed to the great seal. The title is "Treating all kinds of paper whereon "any printing, engraving, engrossing, letter writing, or litho-"graphing has been printed or impressed so that the said printing, "engraving, engrossing, letter-writing, or lithographing may "be completely removed, discharged, or obliterated from the "said paper, & so that the said paper may be readily re-used in "sheets or reconverted and worked up again into its primitive "pulp by the ordinary method, and be again manufactured "into & used as paper;" and this consists, first, in immersing such paper "for a given period in a bath or solution of pure "sulphuric or other acid. The acid acts upon or eats its way "into the oil, lamp black, &c." and "to precipitate" the result the paper acidified is dipped afterwards into a bath of pure spring water or hot water, and retained there only a few minutes, passing a soft brush over it, and, if necessary, bleached by im-"mersion in spirits of ammonia or other alkali," and pressed "to

" take out the stamp of the types before being used," or it may " be reconverted " " into pulp and formed into paper again."

Second, applying the residual products for using as or converting "into printers' ink," or to be employed "as pigments," " or as a lubricating compound, or for electric telegraphic battery " purposes."

[Printed, 3*d.*]

A.D. 1854, July 22.—N° 1613.

LAMB, JOHN.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Certain im" provements in or applicable to machines for making paper;" and these improvements are said to consist " in producing a uni" form partial vacuum in a chamber placed across the paper-making " machine," to deprive the pulp of some of its moisture before couching. The " chamber, open at top, is full or partly full of " water, & has a pipe furnished with a tap let into its under side; " by the flow of the water from this chamber, which is fixed under " the wire web; water is pressed from the wet pulp on the web by " the pressure of the atmosphere, & flows into the vacuum " chamber, thereby supplying the place of the water that flows " off."

[Printed, 3*d.*]

A.D. 1854, July 25.—N° 1631.

NEWTON, ALFRED VINCENT.—" An improvement in the pro" cess of converting wood into paper;" and this "relates to the " conversion of wood into pulp suitable for the manufacture of " paper." The wood is split or sawn into pieces, crushed, and the crushed woody shreds are placed in a vat with a solution of chloride of lime of a certain strength, and agitated; the chloride or chlorine dissolves the gummy matter, and at the expiration of a certain time "the mass assumes the appearance of paper pulp;" after which it is treated in certain proportions, either in the liquid or solid state, with " sal-soda," and it is stated that "the effect of " this addition of sal-soda is to bleach the pulp." The pulp is washed and made into paper. This process is said to embrace,—

First, "the process of reducing wood to pulp" "for the manu" *facture of paper."*

Second, "the employment of chloride of lime or chlorine as a " solvent for gummy matter in woody fibre."

Third, "the employment of sal-soda in connection with chloride " of lime for bleaching pulp so made."

[Printed, 3*d*.]

A.D. 1854, July 28.—Nº 1668.

CLIFT, SAMUEL.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improve-" ments in making paper, pasteboard, and papier maché," and these consist in taking either green grass, nettles, or dried grass, or hay, steeping them for some time in a solution of potash, soda, or ammonia, and agitating them, after washing with clean water, bleaching in the usual way, and making the pulp so obtained "into paper, pasteboard, or papier mache."

[Printed, 3*d*.]

A.D. 1854, July 29.—Nº 1682.

THATCHER, GEORGE.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Im-" provements in the manufacture of woven fabrics, yarn, cordage, " ropes, paper, & pasteboard, by the application of a material not " hitherto used for such purposes;" and these improvements are said to consist "in employing the fibres of the leaves of the horse " radish." The fibres "are spun and fabricated in like manner to " hemp and flax, and may be bleached or not," as required.

[Printed, 3*d*.]

A.D. 1854, August 1.—Nº 1689.

GILLMAN, EDWARD.—" Improvements in the manufacture of " paper, papier mâché, and other similar articles from certain " vegetable substances," and these improvements are, first, employing "the leaves or fibrous portions of the phormium tenax, or " New Zealand flax, the running or creeping plant called giagia, " & the species of dracæna called ti, for the production of pulp " for the manufacture of paper," &c., and other similar substances.

Second.—Treating "the above-mentioned raw material" for the *above purposes.*

There are two modes of treatment, one for the coarser sorts of paper, &c., and another for the finer. To obtain the coarser sorts, the leaves of the plants are collected, dried, chopped into chaff, and the chaff ground and pulped "by any of the methods hitherto "used." The pulp is washed to deprive it of colour. These operations "may be assisted by boiling the said pulp in soft water "or in a solution of potash, or lime, or corbonate of soda, com- "monly termed washing soda, or by steeping it in a similar "solution, which may be heated by steam."

Second.—To obtain the finer sorts. "When the entire leaves "are employed," they are stamped, bruised, or pounded, macerated in soft water for a given time, next boiled or steamed "in soft "water, or in a solution of washing or carbonate of soda or other "alkaline substance, again pounded, bruised, or stamped, and "rewashed, and bleached by washing, by "the action of a running "stream," and exposed "to the action of the atmosphere." Before pulping, the fibre is bruised, beaten, or dusted, and chopped like chaff, steamed or boiled if necessary in soft water or alkaline solution, and bleached by chemical means, and pulped.

The leaves may be obtained from the natives of New Zealand "in the required state of decortation," or deprived of "their outer "peel or cuticle."

[Printed, 4*d*.]

A.D. 1854, August 12.—N° 1761.

TAYLOR, THOMAS GEORGE.—The title of this invention is, "The use or application of the stalk of the hop plant in the manu- "facture of paper, pasteboard, and millboard, cordage, rope, and "textile fabrics," "when treated and prepared," as follows:— Immediately after being cut the stalk or bine is tied up in bundles the length of the plant; and these bundles immersed in water till "fermentation ensues sufficient to partially detach the fibre from "the pithy and woody portions of the stalk. The fibres are sepa- "rated, & boiled if necessary, or steamed, &c., and rolled. The "fibre, now in the state of half stuff, may, if required, be bleached "further." "In some cases it may be mixed in any proportions "with ordinary rag pulp," before manufacturing the same into paper, pasteboard, &c. In making the coarser paper, &c., "it will "not be necessary to separate the fibre from the woody or pithy "*matter.*"

In manufacturing cordage, &c. from hop bine, "it is necessary "to separate the fibre from the pithy and woody matters," and after the fibre is thoroughly cleansed, it is dried, bleached, and "spun into yarns or thread." These are made into ropes, &c., including articles for clothing purposes.

[Printed, 3*d.*]

A.D. 1854, August 16.—N° 1780.

COUPLAND, JOHN.—This invention is void, by reason of the patentee having neglected to file a specification in pursuance of the conditions of the Letters Patent. The title is, "The preparation & manufacture of a pulp to supersede the use of rags & "similar fabrics in the manufacture of paper," and this is manufacturing pulp for paper "from clover, and grasses of all sorts; "from fern, furze, weeds, and rushes, in some cases using a small "proportion of flax." These materials are dried, bruised, or pulverized, boiled in alkali to separate the colour, washed frequently, pressed, boiled with unslaked lime, and washed with agitation, dried, and packed. They are then fit for making paper, and may be further reduced and "treated in a similar manner to other "materials used in" the making of paper. In making the finer qualities of paper "the finer kinds of grass" are selected, and mixed "with a small proportion of flax, which may be also added "with advantage to the other qualities of paper."

[Printed, 3*d.*]

A.D. 1854, August 29.—N° 1891.

DE REDON, JEAN.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "A new "machine for cutting or preparing wood to be used in the manufacture of paper," and this machine is said to be composed of two principal parts, consisting of two drums or cylinders without bottoms, placed one within the other, leaving between them the necessary space for placing the logs of wood; this is called the "support or presenter," and "it is moved by a pulley which gives "it the necessary speed," and brings the wood in contact with a "circular tooth blade set on an axle" "so constructed that the "under part of the teeth cut the wood in a curvilinear direction," and below is "a case for receiving the fibres as they are cut."

[Printed, 9*d.*]

A.D. 1854, September 5.—N° 1939.

TRAPPES, Henry.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "A "process for the preparation of leather, to be used in the manu-"facture of a new flock, and for the manufacture of the same, to "be used and applied in lieu of flock made from pounded or "ground wool or woollen materials, heretofore commonly used in "the manufacture of painted, printed, and died decorating papers, "carpets, oil cloths, and other things; and also to be used as a "pulp for the manufacture of all kinds of paper, parchment, and "pasteboard, of toys, of ornamental and other picture frames, of "mouldings, architectural and sculptural ornaments, and other "things," and this process consists in grinding the leather in a mill upon the principle of a pepper mill, but particularly arranged, infusing it in water for a day or two, washing in plenty of water, bleaching "by alkalines & acids, in order to get rid of the tan;" again, grinding it in millstones, then draining, washing, dyeing, and drying. In making paper, &c. with "leather pulp or paste, "it must when taken from the millstones undergo several washings, "more or less, according to the quality or degree of perfection "required for the article or thing to be manufactured."

[Printed, 3*d.*]

A.D. 1854, September 7.—N° 1950.

WHEELER, George Printy, and BROMHEAD, Samuel.—This invention is void by reason of the patentees having neglected to file a specification in pursuance of the conditions of the Letters Patent. The title is "The production of new fibrous materials, "capable of and suited for the manufacture of string, rope, matting, "and various fabrics with or without the combination of cotton, "wool, or flax, or for pulp for the manufacturing of paper, papier "maché, millboard, &c." The raw fibrous material is "the species "of plants called 'iris,' or the flower-de-luce, or flags, or leaves "of flags, of every description known by botanists as a genus of "plants of the class triandria and order monogynia, which grows in "England, throughout Europe, in the East and West Indies, and "many other climates, and are imported into Great Britain in "mats, bags, and wrappers," as "sugar mats;" and these are to be chopped or cut into requisite lengths, boiled in alkalies, and when

" the silica or hard flinty substances" have been removed the " fibre" "is produced" and "may be converted into yarn, tow, " and pulp."

[Printed, 3*d.*]

A.D. 1854, September 9.—N° 1970.

GUYARDIN, Achille.—"The use of a certain fibrous matter " for the manufacture of paper & pasteboard." This fibrous matter is the "arrow or water arrow (*flèche*, *fleche d'eau*, and " *flechière*). The botanical names are, *ranunculus palustris*, according to Tournefort, and *sagittaria aquatica*, according to Linnæus, of the family of the *butomeae* or *alismaceae*, of Jussieu." This plant grows in the marshes of England, France, &c. The leaves are macerated, steeped or rotted, broken, or scutched, and pulped, "by any suitable means," and bleached and manufactured into "paper, pasteboard, or any like materials."

[Printed, 3*d.*]

A.D. 1854, September 13.—N° 1994.

CROSLEY, Henry.—The title of this invention is, "Improvements in the manufacture of paper, millboard, and felt, from " materials not hitherto so used;" and it is stated that they are improvements on a Patent, N° 8032, granted to the patentee, in which "tan and hops were used by themselves without any admixture." Tan and hops are now to be used mixed with "fibrous " materials, either animal or vegetable, according to the articles to " be produced." "Priorly to mixing" the spent tan or spent hops, either with animal or vegetable fibre, these materials are subjected to "a combination of operations and means, consisting of sifting, " washing, steaming, and washing with a solution made from " potash or soda, and quick or unslaked lime," and put through a mill, and sifted, and "they are then in a condition for mixing " with other fibrous substances." "If brown paper or millboard is " to be made old junk or rope, oakum, cotton waste, old bagging, " hemp and flax refuse, a certain description of peat," "also bog " and mountain heath, couch grass only, and many other such like " vegetable fibrous substances may be employed." When felt is to be made, animal fibre, "such as old and cleansed woollen rags, " previously torn to what is termed flock, by the well-known " machine called 'the devil's head,' or any other short sort of " animal fibre, may be used or admixed."

[Printed, 4*d.*]

A.D. 1854, September 20.—N° 2033.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—" Certain im-" provements in machinery for washing paper stock;" and these improvements are said to be, first, employing " for washing rags " or other paper stock " a reticulated cylinder with open ends, rotating in a trough of water, and partly submerged in it, and having jets or streams of water delivered into it at different parts.

Second.—Furnishing the interior of the cylinder with teeth, which serve as elevators, and which lift up the materials " to expose " them to the jets or streams of water," and drop them " to be " again carried up by the same means."

Third.—Arranging the teeth in one or more spiral lines, so that by the revolution of the cylinder, the materials are conducted " from the entering to the discharging end of the cylinder."

Fourth.—Arranging " oblique curb pieces " at the discharging " end of the cylinder, so as to retain a certain quantity of water " in the cylinder, but facilitating the escape of the washed stock."

[Printed, 7*d*.]

A.D. 1854, September 23.—N° 2053.

HOSKINS, SAMUEL ELLIOTT.—" An improvement in the ma-" nufacture of paper;" and this is said to consist in applying " the fibres obtained from the plant known by the name of the " cyperus longus," of which the " English name is galingale." " The stalks & leaves of the plant when dry are operated upon by " ordinary machinery for separating the fibres, and they are " bleached & pulped by any well-known process."

[Printed, 3*d*.]

A.D. 1854, September 28.—N° 2090.

POOLE, MOSES.—" Improvements in cylinder paper machines;" and these improvements consist in communicating to the cylinders of such machines a vibratory horizontal motion, as well as a rotatory motion, so as to prevent the fibres being laid in one direction, and thus produce a paper of great strength. It is stated that " the ' shake ' of the Fourdrinier machine is not sufficient to " equally distribute the fibres of the pulp over the cylinder," and with the ordinary cylinder machine " the fibres of the pulp are " laid in one direction."

" In place of giving a vibratory motion to the cylinder, the " *same effect*, or nearly so, may be obtained by establishing cur-

" rents in the pulp vat at right angles, or nearly so, to the direc-
" tion in which the surface of the cylinder travels, and this is
" effected by any convenient or desired number of revolving
" screws, from two to three inches in diameter," placed in the pulp vat, and partitioned off from each other. These screws or propellers and the edges of their "partitions are placed very near to
" the surface of the immersed portion of the cylinder."

[Printed, 1*s*. 4*d*.]

A.D. 1854, October 2.—N° 2106.

GRAY, THOMAS.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, " A new &
" improved method of preparing & bleaching raw & fabricated
" fibrous substances, now used in the manufacture of paper, or
" which are applicable to be used in such manufacture;" and this is described as follows:—First, boiling " in a solution of alkali,
" potashes, soda or soda ashes, according to the present method."

Second.—Cleansing in water, also according to the present method.

Third.—Subjecting the material to a second immersion in a hot or cold solution of alkali, or similar to the solution used in the first process, and this is said to be the invention.

Fourth.—The usual process of bleaching by chlorine gas.

Fifth.—Steeping in hot solution of chlorine instead of a cold one, as is now " used in this process of bleaching."

[Printed, 3*d*.]

A.D. 1854, October 2.—N° 2115.

HILL, CHRISTOPHER.—" Improvements in the manufacture of
" paper;" and these consist in reducing vegetable matters to a pulp before bleaching them. Vegetables which abound with fibrous matters are employed, such as " the stems and roots of
" horse radish, the rush, and the flag, together with the vegetable
" remains of horse manure."

[Printed, 3*d*.]

A.D. 1854, October 3.—N° 2120.

JEYES, JOHN.—" An improvement in the manufacture of paper
" threads and yarns;" and this consists in making use of the stems of the mustard, and other plants of the same class. When for the

manufacture of paper, "first tear, cut, or break the stems or stalks, "and boil them in an alkaline solution, the strength of which "varies according to the plant, in a boiler made to revolve vertically and subjected to pressure; afterwards wash and pulp, and "make into paper by any of the ordinary processes." In manufacturing "threads and yarns the stalks or stems are submitted to any "of the processes which flax undergoes for being manufactured "into threads and yarns."

[Printed, 3*d*.]

A.D. 1854, October 10.—N° 2172.

MELLIER, Marie Amédée Charles. — This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of paper;" and it consists in preparing pulp by taking straw or other vegetable fibrous materials cut into short lengths, washing, soaking in warm water, boiling under a certain pressure while being retained between perforated plates, and in a solution of caustic potash or soda; afterwards they are washed, bleached, and pulped.

[Printed, 3*d*.]

A.D. 1854, October 16.—N° 2211.

ROSSITER, William, and BISHOP, Mathew Edwin.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in the manufacture of pulp suitable for paper, pasteboard, and millboard, "papier maché, and other like purposes," and these are, taking rope, shakings, canvas, tow, bagging, and other similar matters used in paper making, reducing them to a pulp, adding oil and alum to neutralize tar, &c., then add refuse tan, bark, or other vegetable matter, pulp the whole, and bleach or not as required.

[Printed, 3*d*.]

A.D. 1854, October 25.—N° 2278.

HELIN, Louis Vital.—"Improvements in the manufacture of "paper from straw;" and these are said to consist in a system of steeping, draining, and rolling to flatten the straw, exposing to the air and sun, and afterwards treating with "alkaline solutions, or

" by the solutions of hypochlorides of potash, or of soda," or of lime. The solutions of a certain strength consist of caustic, carbonate, and bicarbonate of potash or soda, hypochloride of potash, soda, or lime, and hypochlorites of lime, potash, or soda.

Jute and many plants, and "hemp and flax may also be thus " treated and employed in the manufacture of paper."

[Printed, *4d.*]

A.D. 1854, October 30.—N° 2303.

LILIE, GUSTAVE HERMANN.—" A new material for the manu- " facture of paper," and this is said to be "the thistle plant." Dry thistles are to be soaked, treated with water containing certain quantities of nitric and muriatic acids. This acid water drawn off, they are covered with chloride of lime in certain proportions, boiling water added, and after standing the liquor drawn off, and the residue washed and "manufactured into paper by the usual " process."

[Printed, *3d.*]

A.D. 1854, November 4.—N° 2338.

ADCOCK, JOHN.—The title of this invention is "The novel " application of the stem or stalk of the tobacco leaf for various " useful purposes;" and the stems or stalks of tobacco leaf of little value are to be made into a paper tissue or fabric by the ordinary process of paper making, and applied "to the purposes " for which ordinary leaf tobacco has hitherto been employed."

[Printed, *3d.*]

A.D. 1854, November 10.—N° 2385.

NIVEN, JAMES.—" The application of a new material to the " manufacture of paper and also of textile fabrics." This new material is "the holyhock plant or plants comprehended under the " natural order 'malvaceae.'" "The fibres are obtained by steeping, " beating, or breaking, washing by water or by an accidulous " solution," and bleached and dried by exposure to the sun. These fibres are manufactured into paper similarly to rags. The roots may likewise be used to obtain fibre, from which paper, &c. may be manufactured.

[Printed, 4d.]

A.D. 1854, November 17.—N° 2438.

CASTELAIN, Leon.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "A new " manufacture of pulp for making paper and millboard," and it consists in reducing hay, straw, or similar substances into short pieces, subjecting them to a solution of lime, soda, potass, pearlash or chloride of sodium, and to nitric, sulphuric, muriatic, or hydrochloric acid; they are then pulped, "pressed, and treated with " chloride of lime and water, when they will be found suitable for " the manufacture of paper and millboard.

[Printed, 3*d*.]

A.D. 1854, November 17.—N° 2440.

MACADAM, John.—"Improvements in the preparation or sizeing " of paper, or the materials used in the manufacture thereof;" and these improvements consist in using "uncombined acids, as sul" phuric acid or of single sulphates and other binary compounds, " for neutralizing the alkali in the size solution to be used in the " preparation of, wholly or partially, rosin-sized and machine-made " paper." These acids or salts may be partially or entirely substituted for the alum usually employed. The method of application is as follows:—The size composed of rosin dissolved in an alkali is added to the pulp in the engine. The size solution should be of a certain strength, and the amount of alkali known in it is neutralized by the addition of dilute sulphuric acid, after which any alum may be added before making into paper.

[Printed, 4*d*.]

A.D. 1854, November 20.—N° 2451.

DIAPER, Henry.—Applying "cocoa-nut kernel to the manufac" ture of paper." The kernel separated from the shell is freed from its brown skin and crushed to extract the oil, and the residue reduced by rollers and boiled. The oil rises to the top and is drawn off. " The fibre is now in a fit state to be converted into " pulp for some descriptions of paper, such as brown or mill" board," in which a little "oil is not injurious." But to get rid of the oil it should be washed with alkali, &c., and it "is then " adapted for making pulp for white paper."

[Printed, 3d.]

A.D. 1854, November 29.—Nº 2506.

PETERSON, Charles.—"The application of a new vegetable "substance to the manufacture of textile fabrics, and pulp for "paper, cardboard, papier maché, and similar purposes;" and this new substance is said to be "the seatree mallow, or lavateria "arborea marina." "The fibrous material being the inner lining "of the bark, the plant or tree is passed through rollers," which separates "the fibrous from the ligneous. The fibrous portion is "treated in the same way as in preparing flax or hemp," and "the short combings of the fibre, and the ligneous or woody "refuse of the plant," are applied to the production of paper, &c., employing for that purpose "the well-known processes adopted in "the treatment of rags."

[Printed, 3*d.*]

A.D. 1854, November 30.—Nº 2517.

QUIQUANDON, Jean Baptiste André.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Certain improvements in manufacturing "corks, and in the mode of employing their residues or wastes;" and a machine is described for making corks, which, instead of shavings, gives powder as a refuse. This dust or powder is to be "mixed with caoutchouc, gutta percha, resin, tar, boiled leather, "papier maché, kaolin, felspar, or other plastic composition "capable of being moulded, stamped, or carved," and manufactured into "plates, trays, rosettes," &c., or "furniture, buttons, "candlesticks, vases, tapestry, carpets, cloth, paper, book covers, "pipes, whips, and lashes, &c.;" also, "for stuffing bedding and "dolls," &c.

[Printed, 3*d.*]

A.D. 1854, December 2.—Nº 2540.

BELLFORD, Auguste Edouard Loradoux.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in the manufacture of paper "and pasteboard;" and these improvements are said to be applying down or cotton gathered from thistles, also moss and lichen plants. These are to be washed, or digested, or steamed, disintegrated and bleached, and "converted into pulp by the "*usual means*, or as may be found suitable."

Printed, 3d.]

A.D. 1854, December 13.—N° 2621.

JULLION, John Louis.—"Separating certain vegetable fibres "from mixed fabrics for various useful purposes;" and the fibres "separated may be employed for paper making," &c.; and this is effected as follows:—"Separating the vegetable fibres in an integral condition from the mixed fabrics by dissolving the animal "matter in a solution of caustic alkali or alkaline earth, soda or "lime preferred," by boiling for a sufficient time.

Second.—Separating the nitrogen of the animal fibre in the fabrics by distilling them in a close vessel mixed with the alkali or alkaline earth. The heat preferred is high pressure steam, "passing through the whole mass of fabrics." The ammonia coming off is condensed in water.

Third.—Mixing the materials with an alkali or alkaline earth, heating them to 180 degrees F. in an open vessel, drawing off the liquor, and saturating the alkali in it with carbonic acid gas. The animal matter which was in the fabrics "precipitates in the form "of a fine powder."

"When the animal matters in the fabrics are required to be "preserved intact," the fabrics are moistened with an acid either mineral or vegetable, tartaric or oxalic acid preferred, and heated to 300 degrees F.; a jet of steam preferred. The vegetable fibre becomes rotten, and the animal fibre is "readily separated from it "by any suitable contrivance."

[Printed, 4*d.*]

1855.

A.D. 1855, January 10.—N° 62.

PREDAVAL, Bartholomew.—"Improving the production and "manufacture of pulp for making of paper," by "subjecting the "fibrous parts of the willow, mulberry, and other trees, and also "other vegetable and fibrous substances to the action of a machine" described, "for the purpose of being pounded, bruised, ground, or "triturated and winnowed until the fibres become sufficiently "*detached.*"

[Printed, 8d.]

A.D. 1855, January 18.—N° 135.

JOHNSON, William.—"Improvements in the application, " treatment, cleansing, and dyeing of fibrous substances and pro- " ducts." The fibrous substances and products are shrubs, reeds, rushes, straws, hay and grasses, stalks and leaves of various plants, canes, ferns, mosses plantains, palms, fibrous woods and roots, barks, basses, wood shavings, wood raspings, wood turnings, saw-dust, spent dyewoods, and spent tan; also yarns, clothes, felts, rags, lint, mats, pulps," &c. These substances are boiled in a solution of "caustic lime, water, and caustic soda or potash of " suitable strength" washed, boiled or steamed, bleached by "a " cold solution of chloride of lime or other bleaching liquor." " Chlorine gas or the fumes of sulphur may also be passed through " the solution;" and sometimes it may be advantageous (before bleaching) " to acidulate the heated water with sulphuric or muri- " atic acids," and also to add " a small proportion of caustic lime· " soda, or potash, or magnesia, or other salt."

"Several plants and other substances containing woody fibre " may be advantageously applied in the manufacture of white " paper pulp; of these" the following "may be especially used:— " The inner bass of the lime tree and other siliaceæ, the willow, " birch, elder, the leaves of coniferæ; also heather and other " ericaceæ rushes and other juncaceæ, clover, lucerne, stalks of " pease, broom, whin, and other leguminous plants (except the " stalks of common leaves), sunflowers, Jerusalem artichokes, and " other compositeæ (except thistles), nettles and other urticeæ, " turnips, mustard, and other cruciferæ; cucumbers and other " cucurbitaceæ, mosses, licopodium equisetum, ferns, reeds, canes, " bamboos, water lillies, water weeds, anacharsis, alsinastrum, " and other water plants; rye grass, pampas grass, mya and other " grasses; raspberry, blackberry, and other rosaceæ; malva, sida, " and other malvaceæ (except altheæ, gossypium and corchorus); " buckwheat, leaves of palms, sugar cane, tillandsia, and other " bromeliaceæ; maize and sorghum plant, madder and other " rubiaceæ; anonaceæ, melastomaceæ, velloziæ, panax, solanaeæ, " cupheæ, rhamneæ, lychnophora, terebinthenaceæ, bombax, myr- " tacea, bigonaceæ, lilaceæ, artocarpeæ, the mulberry, pandanus, " cecrops dracena, polygaleæ, malpighiaceæ, convolvulaceæ, leaves " of musaceæ, broussonetia, boehmeria, amomum, manispernum, " *erytoxylon* gutlaferesæ, ricinus, and other euphorbiaceæ, ascle-

" piadiæ, apocineæ, rutaceæ, phormium, iris, solaneæ, the stalk of " the tobacco plant, cactus, papyrus, aloes, agave, labitaæ, asparagrass, juniper, rice straw, mandioca plant, gramineæ. For " certain pulps, the refuse from breweries, bran, spent tan, and " spent dyewoods, and sea-weeds may be employed."

[Printed, 4*d*.]

A.D. 1855, January 30.—N° 231.

POCHIN, Henry Davis.—" Improvements in the treatment of " certain compounds of alumina, and the application of the same " in printing, dyeing, tawing, paper making, and such like purposes," and a mode of treating clay with sulphuric acid is given, and the result is " aluminous cake," which among other things may be used "in the manufacture of paper, as a substitute for " alum, and the ordinary sulphate of alumina."

[Printed, 3*d*.]

A.D. 1855, January 31.—N° 233.

SMITH, John, and HOLLINGWORTH, James.—" Improvements in treating certain fibrous materials for manufacturing " paper," and these are said to consist in a " method of bleaching " Surat jute, gunny or sugar bagging," &c. First, sorting and well cleansing by willowing and washing in a pulping machine; then draining and boiling for a given time in milk of lime of a given strength, allowing to cool, re-washing by apparatus as before, adding a small quantity of oil or grease, and finishing " by " washing with a weak solution of hydrochloric acid either hot " or cold," draining or pressing, bleaching with chlorine gas, &c., and washing out the gas with water of a certain temperature, and adding oil or grease. After washing they are treated with acid water, and with a solution of sulphate of soda, &c.

[Printed, 3*d*.]

A.D. 1855, February 3.—N° 260.

DE LA BERTOCHE, Hippolyte Victor Pinondel.—This invention did not proceed to the Great Seal. The title is " Certain " improvements in manufacturing paper, pasteboard, &c.;" and these are said to consist in employing the " asphodel root " either before or after distillation.

[Printed, 3*d*.]

A.D. 1855, February 6.—N° 276.

TRAPPES, Henry.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "A " process for the preparation of leather to be used in the manu- " facture of a new flock, and for the manufacture of the same, " to be used and applied in lieu of flock, made from pounded " or ground wool and woollen materials, heretofore commonly " used in the manufacture of painted, printed, and died decorating " papers, carpets, oilcloths, and other things; and also to be used " as a paste or pulp for the manufacture of all kinds of paper, " parchment and pasteboard, of toys, of ornamental and other " picture frames, of mouldings, architectural and sculptural orna- " ments, and other things," and this process consists in grinding, washing with water and alkalies, and acids, &c.

[Printed, 3*d.*]

A.D. 1855, February 9.—N° 310.

PARKER, Francis.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "An " improvement in the manufacture of paper;" and this is said to consist in operating in the usual manner upon "the haulm or stalk " of the potatoe plant."

[Printed, 3*d.*]

A.D. 1855, February 10.—N° 320.

BELLFORD, Auguste Edouard Loradoux.—(*A communication from Professor Frederic Kuhlmann.*)—The title of this invention is "Certain materials to be used for cementing and painting, and " also applicable to printing and dressing, or finishing fabrics," and these materials are soluble "silicates of potash or soda " (otherwise called soluble glass);" and among other uses these, when mixed with other things, are to be used for writing upon paper; and the solution of silicate may be mixed "with paper " and pasteboard pulp, for the purpose of rendering the paper " and pasteboard made with it more substantial."

[Printed, 4d.]

A.D. 1855, February 15.—N° 346.

DELABARRE, Christophe François.—The title of this invention is "Improved apparatus to be used in propelling gases "and forcing liquids," and apparatus are described wherein air, gas, or steam issuing from an orifice expands by reason of entering into a larger tube or tubes, and thus causing a draught; and this principle is said to be applicable to many manufacturing purposes; and it is said it may be employed to obtain a certain vacuum in paper engines and other apparatus, where it is now generally obtained by means of suction pumps.

[Printed, 1*s.* 3*d.*]

A.D. 1855, February 16.—N° 351.

BROOMAN, Richard Archibald.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "A means of preparing the fibres of certain plants of "the bean species in order to form them into pulp, and to fit "them for other manufacturing purposes;" and it is stated that the plants to be operated upon are French beans, scarlet runners, &c., &c., and they are to be submitted to boiling, draining, pressing, afterwards boiling in soap water, drying, and rubbing, scutching or combing, again boiling in soap water; they are then "in a state of pulp fit for the manufacture of "paper," &c.

[Printed, 3*d.*]

A.D. 1855, February 26.—N° 420.

BROWN, Alexander.—"Improvements in the manufacture "of paper, and in the production of textile materials;" and these improvements are applying and using "the fern or bracken plant "or plants comperhended" "under the Cryptogamic series" "for "the manufacture of paper and textile materials."

[Printed, 3*d.*]

A.D. 1855, March 24.—N° 652.

NIVEN, James.—This invention did not proceed to the Great Seal. The title is "Improvements in the manufacture of paper "& in the production of textile materials;" and these improvements consist in applying and employing the common broom plant and the whin plant *gneista scoparium* and *ulex Europea*.

[Printed, 3d.]

A.D. 1855, April 5.—Nº 757.

GOOSTREY, William, HULME, George, and HOUGH, Charles.—" Improvements in machinery or apparatus for " manufacturing paper;" and these improvements consist in using a revolving porous surface as described, for the purpose of saving the waste material, carried away by the overflow of water.

[Printed, *6d.*]

A.D. 1855, April 16.—Nº 836.

COWLEY, John, and SULLIVAN, Daniel Peyton.—" Improvements in the manufacture of paper;" and these improvements are,—First, using caustic soda liquors of a certain strength, in manner described, and, with superheated steam, &c., " for the " manufacture of pulp from straw," &c.

Second. Using steam in certain manner in the process of bleaching. This relates principally to the gradual introduction of the steam into the materials which it is said is most important.

Third. Reducing the pulp in a beating engine, with an arrangement so that " the bevil edges of the rollers and plates being in " contact, a grinding as well as cutting action is exerted upon the " straw."

[Printed, *4d.*]

A.D. 1855, April 20.—Nº 880.

MACÉ, Hypolite.—(*A communication from L. A. C. Macé.*)—The title of this invention is " Improvements in transferring colors " or metals in design on and from paper and stone on to surfaces;" and in carrying out this a paper is prepared, the exclusive use of which is claimed " for reprinting or transferring drawings or " designs." The " paper is prepared by two coats or layers of " matters easily dissolvable in water, such as the juice of plants " or roots, which having been well boiled in water express a very " sticky or adhesive juice," such as " marshmallow roots, marine " lichen, white onion, garlic," &c. This juice is to be mixed with a starchy matter. The paper should be thinly coated with it, and when the first coat is thoroughly dry, it should be again coated, and if still not enough, should receive a third coat, after which the paper may be glazed.

[Printed, *4d.*]

A.D. 1855, April 20.—N° 882.

MANNING, James Alexander.—This invention did not proceed to the Great Seal. The title is "Improvements in effecting "the agitation of fluids and solid matters contained therein," and these improvements are "passing an air pipe or pipes down "into the mass of the fluid matter to be agitated, the inner "discharging end of such pipe being nearer to or further from "the bottom of the containing vessel, according to the nature "of the fluid under treatment and the motion to be produced "therein." It is stated that "such a mode of agitating fluids "is particularly suitable for brewers, distillers, and paper makers." The air or current may be produced in various ways, and the mouth of the pipes "may be variously modified to suit the effects "to be obtained."

[Printed, 3*d*.]

A.D. 1855, April 25.—N° 923.

WALLACE, James, Jun.—"Improvements in bleaching, washing, or cleansing textile fabrics & materials," and these improvements are said to be in connection with the ordinary dash wheel. The wheel is to be mounted on a hollow shaft, and steam is to be supplied through perforations in the shaft into the several compartments of the wheel, or by means of perforations in branch pipes connected with the shaft. But besides the steam, acids, alkali, soap, &c. may be introduced into the wheel. No mention is made that the materials so treated are applicable to the manufacture of paper, &c., but it is stated that "various classes of "goods may be thus treated, and that "the invention is especially "applicable for the treatment of 'sewed muslins,' or embroidered "goods."

[Printed, 10*d*.]

A.D. 1855, May 2.—N° 988.

MELLIER, Marie Amedie Charles.—"An improvement in "the manufacture of paper," which improvement consists in subjecting straw or other fibrous substances to a boiling process in a weak solution of caustic alkali under considerable pressure.

[Printed, 3d.]

A.D. 1855, May 4.—Nº 997.

DE FRONTIN, Jean Pechgris.—Manufacturing paper and pasteboard with pulps extracted from the acacia tree, various kinds of lupins, the plant called bryonia, the amylaceous matter of which may be applied to sizing the paper; the stalks, &c. of the plant called topinambou, or Jerusalem artichoke, and the stalks of the different kinds of heliotropium or sun flower. The usual processes, maceration, steeping, washing, and bleaching, "are employed for reducing these vegetable matters into pulp."

[Printed, 3*d*.]

A.D. 1855, May 7.—Nº 1018.

JOHNSON, John Henry.—(*A communication from Francis Joseph Bérendorf.*)—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of paper and cardboard," and these are said to consist in employing the waste or residual beetroot after spirit distillation. It may be used either in a crude or prepared state after treatment "with acids and alkalies."

[Printed, 3*d*.]

A.D. 1855, May 8.—Nº 1025.

HUGHES, Joseph.—"Improvements in the manufacture of paper," and these improvements are said to consist,—

First, in applying and using "sulphate of alumina instead of the alum of commerce in the manufacture of paper."

Second, in applying and using "precipitated sulphate of barytes for the same purpose."

Third, in applying and using "precipitated sulphate of barytes and alumina."

The modes of preparing these different substances for the purposes required are detailed.

[Printed, 4*d*.]

A.D. 1855, May 17.—Nº 1116.

JOHNSON, William.—The title of this invention is "Improvements in the manufacture, treatment, and application of oily, resinous, and gummy substances and soaps;" and these improvements are said to relate more especially to the mixing of various substances with gutta percha and india-rubber or caoutchouc, and among other things it is stated that by adding to melted resin, dry powdered carbonate of soda or potash, a compound is obtained soluble in water, which may be employed for sizing paper pulp, &c., &c., named "patent soluble resin."

[Printed, 4*d.*]

A.D. 1855, May 21.—N° 1131.

DIDOT, PAUL FIRMIN.—"An improved process of bleaching "paper pulp, textile fabrics, and other substances or matters," and this is said to be saturating with or steeping in a solution of chloride of lime these substances, and "causing carbonic acid gas, obtained either naturally or artificially, or even "from the atmosphere itself, to be forced through the materials." An apparatus is described to conduct this gas as required, whether derived from the combustion of coke, &c.

[Printed, 6*d.*]

A.D. 1855, May 23.—N° 1158.

OCHS, LAZARE.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of certain kinds of paper from the "refuse and cuttings of leather during the operation of tanning;" and these improvements are said to be taking the cuttings or offal produced in the operation of dressing leather, passing them through a cylindrical vessel to tease or toss the material; or the cuttings may be plunged in water and shaken and mixed with a certain quantity of cord cuttings or other similar material, and worked into "paste, from which it is converted into paper in the "usual manner."

[Printed, 3*d.*]

A.D. 1855, May 24.—N° 1170.

PARK, JAMES.—Combining a steam engine with a rag engine in order to cause motion to be communicated directly from the steam engine to the shaft of the rag engine, so as to dispense with the gearing usually employed for driving the rag engine, and to enable the attendant to vary its speed independently of the other machines in the mill.

[Printed, 5d.]

A.D. 1855, May 31.—N° 1240.

JULLION, John Louis.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "The manufacture of paper, card, and mill board from certain "vegetable productions;" and these vegetable productions are "the fibres of the banana and plantain plants," "waste or pressed "sugar canes, and the various water flags that abound in warm "countries." These substances are dusted in a machine called a devil, cut in a chaff-cutting machine, boiled in a solution of "caustic alkali with or without steam pressure, and bleached in "the usual way with hypochloride of lime."

[Printed, 3*d.*]

A.D. 1855, June 19.—N° 1397.

BURKE, Francis. — "Improvements in preparing pulp or "pulpous material, applicable in the manufacture of paper, and "for other useful purposes;" and these improvements consist in converting the fibres of vegetables into pulp without first "sepa-"rating the fibrous matter from the other component parts of "vegetable substances." The plantain, the banana, and the aloe, &c. are ground between stones with a supply of water. The water may be hot or cold, and may be mixed with a chemical agent. A trough, round which are sieves, receives the material, and the water passing through the sieves leaves the fibrous material, which may be bleached.

[Printed, 4*d.*]

A.D. 1855, June 20.—N° 1411.

MARTENOLI DE MARTINOI, Giovanni, and O DE LARA, Juan Francisco.—This invention received provisional protection but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "The "employment of a new material in the manufacture of paper," and this new material is seaweed. It is to be dried, washed, cut, steeped in acids and alkalies, bleached, &c.

[Printed, 3*d.*]

A.D. 1855, June 21.—N° 1418.

JULLION, JOHN LOUIS.—First, manufacturing "white paper " and card from the fibres of the plantain and banana plants, sugar " cane and reeds," by a process described. This process consists in dusting, and cutting, boiling, &c. by high pressure steam, using a solution of hydrate or carbonate of soda.

Second, employing "alkaline sulphurets, or a mixture of alka- " line and earthy sulphurets, with hydrates of alkalis in the " manufacture of paper from straw."

Third, " the application of percolation under high pressure, " combined with an alternating tumbling motion, in boiling all substances intended for the manufacture of paper, card and mill board."

Fourth, employing "a rotatory vessel in which a pressure of " chlorine gas is generated for the purpose of pickling or bleaching " materials used in the manufacture of paper."

Fourth, employing a current of atmospheric air in the process of bleaching.

[Printed, 1*s*. 3*d*.]

A.D. 1855, June 21.—N° 1426.

BASÉBÉ, WILLIAM.—"An improvement in the manufacture " of paper," and this consists in making scented paper by in- " troducing scents into the pulp. An alcholic solution of oil of roses in certain proportion is added to the pulp, and other scents may be so used, or the paper is immersed when in a green state and unsized in the "alcoholic perfume" of a certain strength.

[Printed, 3*d*.]

A.D. 1855, June 22.—N° 1433.

SIMON, SIMON EUGENE GABRIEL.—Substituting wholly or in part plants of the family sparganium for rags, in the manufacture of paper by the ordinary processes.

[Printed, 3*d*.]

A.D. 1855, July 5.—N° 1510.

HORTON, JOSHUA, and HORTON, THOMAS.—Using " spent " tan, treated by mechanical means for the production of fibre " suitable for the manufacture of paper, pasteboard, and pulp." *The mechanical* means preferred and described are a machine, consisting of a drum or roller provided with teeth, through which the spent tan is passed, after which it is to be sifted, &c. The fibre produced " may be used alone or mixed with other vegetable " fibre."

[Printed, 5*d.*]

A.D. 1855, July 13.—N° 1578.

KOCH, Louis.—The title of this invention is "An improvement " in machines for making pulp from wood and vegetable fibrous " substances;" and the novelties are said to be three in number, first, in the general construction and arrangement of the machinery.

Second. In the combination of a series of crushing rollers increasing gradually in diameter and speed in proportion as the wood, &c. is extended or pressed out.

Third.—" The peculiar construction, arrangement, and mode of " working the crushing rollers, wherein the surface or circum- " ference of one of every pair of the extending or crushing rollers " has a greater speed imparted to it than to the surface or circum- " ference of its corresponding roller, for the purpose of producing " a slight dividing or separating action, which divides each fibre " without destroying " it.

[Printed, 10*d.*]

A.D. 1855, July 14.—N° 1587.

BURKE, Francis.—" Improvements in obtaining or preparing " the fibres of the plantain, banana, aloe, and other vegetables for " various manufacturing purposes;" and these improvements are, " submitting the vegetable substances to the action of beaters or " projections fixed upon the periphery " of revolving drums, rollers, or cylinders, to separate the fibres from the other matters combined or mixed with them.

[Printed, 4*d.*]

A.D. 1855, July 19.—N° 1624.

MARTIN, Robert, and MARTIN, John Cowdery.—" An " improvement in obtaining pulp from wood;" and this is said to consist in reducing wood in a moistened state into fibrous threads or strings " for manufacturing pulp to be employed in " manufacturing paper, papier maché," &c. The fibrous threads are obtained by passing the wood, in preference in plank or deal, to and fro against the surface of a cylinder having "teeth or "points resembling a saw or rasp." The fibrous matters are bleached, &c.

[Printed, 4*d.*]

A.D. 1855, July 20.—N° 1639.

GILBEE, WILLIAM ARMAND.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "the employment of a new material in the manufacture of "paper." This new material is dogs'-grass, which is to be prepared by steeping, bruising, bleaching, &c.

[Printed, 3*d.*]

A.D. 1855, July 20.—N° 1645.

MOLL, FRANCIS.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "The em-"ployment of new materials in the manufacture of paper;" these new materials are the combined fibrous matters from the stalks and stems of the potatoe, and the leaves or fibres of the fir tree and other conifera, and the further combining with either or both of such fibrous matters the fibres of cotton, &c.

[Printed, 3*d.*]

A.D. 1855, July 23.—N° 1661.

KELK, THEOPHILUS HENRY HASTINGS.—"Rendering certain "vegetable substances useful for the manufacture of paper, and "the formation of textile fabrics and cordage or ropes;" these substances are "the bark of elm, of lime, of poplar, of willow, and "of marshmallow canes or rods; the leaf stalk of horse-radish, and "the root of horse-radish; the shrubby cane or rod of marsh-"mallow." In some the exterior coating is to be removed, when, with the exception of the horse-radish, they are to be dried, immersed in water, which may be cold or heated, and contain according to the substance under treatment, &c. certain quantities of soda, potash, lime, borax. Besides the above vegetable substances, the woods of elm, poplar, and willow may be utilized, by treating them in a somewhat similar manner.

[Printed, 4*d.*]

A.D. 1855, August 1.—N° 1742.

BROOMAN, Richard Archibald.—(*A communication from H. V. P. De la Bertoche.*)

First. Employing "the root of the asphodel plant and the re-" mains of the same after distilling, alone or combined, for the " manufacture of paper, &c."

Second. Treating "the asphodel root or its remains after distil-" lation to form it into pulp, paper, &c." This treatment consists in washing, steeping with alkali, and if neeessary bleaching.

[Printed, 3*d.*]

A.D. 1855, August 6.—N° 1782.

LILLEY, John.—This invention did not proceed to the great seal. The title is "Improvements in obtaining textile fibres, and " in the manufacture of pulp and dye," and these improvements are said to be employing a plant "the growth of West Africa, and " known at the Cameroons by the name of medickey," by bruising crushing, or beating the stem, and treating it in the same manner as flax and hemp, and by infusing or steaming the dye is in solution, leaving the fibrous pulp, which may be bleached, &c.

[Printed, 3*d.*]

A.D. 1855, September 6.—N° 2019.

FRASER, James.—The title of this invention is "An improve-" ment in the manufacture of paper;" and this improvement is said to consist,—

First. In employing a caustic lye in combination with chloride of sodium in preparing "straw, grass, salt hay, and other vegetable " substances for the purpose of producing therefrom paper."

Second. Restoring the caustic lye to its original strength, by which it may be used "many times over;" and this is done by adding to it, from time to time, a strong caustic lye prepared from certain quantities of soda or potash and lime.

Third. "Purifying the liquor after its frequent use by filtering " it through lime."

[Printed, 3*d.*]

A.D. 1855, October 3.—N° 2208.

DICKINSON, John.—"An improvement in the manufacture of " paper;" and this consists in combining together two webs of *paper formed* "simultaneously, the one on a Fourdrinier and the

" other on a cylinder machine." The object is to produce paper possessing varying characters of surface, which will permit of its being used indifferently for copper plate or lithographic printing. The two webs are brought together and combiued by passing under a dandy roll and over a suction or exhaust trough, by which they are formed into a compound web.

[Printed, 9*d.*]

A.D. 1855, October 16.—N° 2315.

FRASER, James.—" An improvement in the manufacture of " paper or paper pulp;" and this improvement is said to consist in treating straw or other vegetable fibre for the purpose of disentegration, with a combination such as a solution obtained by treating soda or potash with lime, and adding rosin.

[Printed, 4*d.*]

A.D. 1855, November 22.—N° 2636.

LOTTERI, Frederic.—This invention did not proceed to the Great Seal. The title is " Obtaining fibre from the bark of trees " of the morus family or class, and the application thereof to the " manufacture of paper and textile materials, and for other " useful purposes;" and this is to be effected by steeping or steaming in a certain manner, or clearing by chemical agents, and beating, or threshing, and bleaching.

[Printed, 3*d.*]

A.D. 1855, November 29.—N° 2696.

ARCHER, Charles Mabury.—This invention did not proceed to the Great Seal. The title is " a new material for the manufac- " ture of paper, and for the production of textile fabrics." The new material consists of "sea weeds and freshwater weeds;" by washing, boiling, drying, crushing, triturating, or scutching, steeping, boiling in alkali and acid, bleaching, &c., they are ready for use.

[Printed, 3*d.*]

A.D. 1855, December 4.—N° 2727.

BARLING, Joseph.—" An improvement in the manufacture of " *paper by the* application of a root not before used for the pur- " *pose.*" *The root* " is that of the hop plant humulus lupulus;"

whether the roots be refuse roots or cultivated purposely for making into paper, and they are to be cleansed, dried, stored, afterwards boiled in an alkaline solution, &c.

[Printed, *4d.*]

A.D. 1855, December 5.—N° 2733.

PLUNKETT, William George, and BOWER, John.—Manufacturing textile fabrics, &c., from the plants "iris pseud " acorus, commonly called the yellow flagger; the arctium bar " dana, or woody-headen burdock; the tussilago farfara, or " common coltsfoot; and the beta vulgaris, or red or white beet or " mangold worzel, and turnip leaves and stems;" also from the said plants, their leaves, stems, and bulbs making paper, papier maché, millboard, &c., by crushing, boiling in water and alkali, exposing them to the atmosphere, &c., &c.

[Printed, *4d.*]

A.D. 1855, December 10.—N° 2783.

JOHNSON, John Henry.—(*A communication from Victor Courboulay*).—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Improvements in " the manufacture of safety paper," and these are said to consist in employing salts containing iodine or bromine combined or separate; not only are the soluble compounds of bromine and iodine employed, but also the "insoluble, especially those which " contain cyanogen and fluor." The chemical ingredients are mixed with the pulp, or the paper is steeped or soaked in the chemical solutions.

[Printed, *3d.*]

1856.

A.D. 1856, January 8.—N° 57.

PARISET, Claude Louis.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " An improved paste for manufacturing paper, pasteboard, and " other similar products," and this paste is to be obtained " from " *grass, or hay,* and similar plants used as forage, and also from

" weeds and other herbs," by steeping in water, or water with a certain amount of carbonate of soda, crushing, squeezing and fermenting to putrefaction, bleaching, &c., and made into pulp. " This pulp may be used alone, or mixed with the ordinary pulp " from rags."

[Printed, 3*d*.]

A.D. 1856, January 19.—N° 154.

VAN DEN HOUT, HERMAN JOHN, and BROWN, EBENEZER.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Improvements in the preparation of pulp for the manufacture of paper, millboard, and " other like purposes;" and these improvements are taking shavings, &c. of leather, cleansing them and pulping them, mixing them with a certain per-centage of " common pulp made " from ropes, rags," &c., and making them into "paper, mill" board," &c.

[Printed, 3*d*.]

A.D. 1856, January 25.—N° 197.

CHAUCHARD, FELIX.—First, applying machinery which is described " in separating and dividing the various plants, &c. named, in the manufacture of paper and pasteboard. The substances named are " all sorts of wood, straws, rushes, mat weeds, " palm trees, rags and all vegetable either wood or fibrous " materials," and the machine for dividing and separating them consists of a cylinder rotating round its axis, having " a system " of combs, or metallic slays, according to the nature of the " substances to be separated and which catch the wood or sub" stance submitted to them." The mode of submitting the wood to the cutters depends upon whether it is hard or soft wood.

Second. Applying a machine which is described, for reducing the pulp produced by the above machine into fibres. This machine is composed of a trough filled with water, having in it a bucket wheel which raises the pulp and throws it on an inclined plain which leads it to three rollers, " where it is triturated until " *the pulp is fit for* the manufacture of paper and pasteboard."

[Printed, 1s. 1d.]

A.D. 1856, March 3.—N° 540.

WALLACE, James, Jun.—" Improvements in bleaching, washing, cleansing and drying textile fabrics and materials." These improvements are said to consist in extending the operations and improving the practical effect of the machine known as the " hydro-extractor." This centrifugal apparatus is a cage or permeable chamber, mounted and rotating upon a spindle; now it is proposed to pass steam or heated water into the chamber, in preference through a tabular shaft, " to mingle with the goods " therein;" bleaching and cleansing fluid matters " thrown off " and through the sides of the chamber may be returned again " and again to the goods." Instead of the foregoing " a modified " form of 'dash-wheel' may be employed and supported in " bearings on one side only, and revolving upon a horizontal or " inclined spindle." The " dash-wheel " may be divided into any number of chambers, and it may be permeable or impermeable, just as the fluid matters " are or are not to pass through the " sides."

No mention is made of any manufacture to which goods so treated are to be applied.

[Printed, 7*d*.]

A.D. 1856, March 19.—N° 650.

OCHS, Lazare.—" Improvements in the manufacture of certain " kinds of paper from the refuse of tanned leather." The refuse tanned leather is first freed from its "tanning" by passing it " through a cylindrical sieve or riddle," " water pouring on to or " into the cylinder;" or if the refuse be wet it may be put into baskets saturated with water and " continually shaken until the " desired separation ensues." After the tanning is separated the refuse is mixed with a certain quantity of rope or other fibre, and pulped, &c., from which pulp "paper may be made in the usual " manner."

[Printed, 3*d*.]

A.D. 1856, March 29.—N° 759.

MUSCHAMP, William.—" An improvement in the manufacture of paper in order to render the same waterproof;" and this consists in saturating dried or partially dried paper with a solution of alum, soap, glue, and gum arabic, and thus rendering the same waterproof. The mode of doing so is as follows:—A certain amount of alum is dissolved in water; in another vessel a certain amount of soap and borax are dissolved; and in a third, gum arabic and glue, likewise in certain proportions. The three solutions are then mixed, warmed, and the paper "conducted into and through "such compound solution, &c." The borax is not essential, and may be dispensed with.

[Printed, 3*d.*]

A.D. 1856, April 1.—N° 789.

PATERSON, JOHN.—This invention did not proceed to the Great Seal. The title is "Improvements in the manufacture of "paper," and these improvements are said to relate to "the "primary breaking up or disintegration of the rags or raw materials," the "washing or boiling process, and the final bleaching "of the reduced pulp." The rags are steeped in an acidulous solution, and afterwards rubbed by rotating rollers, or otherwise, boiled in a boiler with an agitator through which jets of steam issue, &c.

[Printed, 3*d.*]

A.D. 1856, April 3.—N° 811.

BANNEHR, JAMES.—"An improvement in manufacturing or "preparing paper for and in mounting copies of written documents thereon;" and this improvement "consists in preparing "and coating both sides of ordinary writing paper with adhesive "matter," "of equal or indefinite proportions of gum acacia or "dextrine and of gum tragacanth, or any other gum," &c. and when dry causing copies of documents, drawings, designs, &c. produced by the ordinary copying machine, &c. to be pressed on to one or both sides of such paper. The copies, &c. are wet from the machine, or are moistened when put on and pressed in a suitable press.

[Printed, 3*d.*]

A.D. 1856, April 7.—N° 837.

SMITH, JACOB, and LUNTLEY, JOHN.—This invention did not proceed to the Great Seal. The title is "treating the sun-"flower plant to render its fibres applicable to the manufacture "of textile fabrics, paper, yarn, cordage, &c.;" and consisted in steeping in water, or exposing to the air, pressing, washing, bleaching, &c. the sunflower plant.

[Printed, 3*d.*]

A.D. 1856, May 2.—N° 1039.

COWLEY, JOHN.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "improvements in the manufacture of paper from straw and other "vegetable substances;" and these improvements are converting these substances with economy and despatch, and are to be effected by boiling by a certain arrangement in an alkaline liquor, the materials "cut into short lengths," afterwards washing, passing "through a beating engine, and finally" bleaching.

[Printed, 3*d.*]

A.D. 1856, May 8.—N° 1080.

NIVEN, JAMES. — This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in the manufacture of paper and in the production "of textile materials;" and these improvements are said to be, first, applying, as above, the bark of the elm or *ulmus Europœa.* The external rind being removed, the rest is disintegrated, either before or after boiling in caustic ley, and the resultant mass is worked into paper in the ordinary way. Second, applying also for the same purposes the *lecistera formosa.* "The inner bark of "this shrub is used in the same manner as that of the elm."

[Printed, 9*d.*]

A.D. 1856, May 10.—N° 1108.

WALLACE, JAMES, Jun.—"Improvements in preparing, bleaching, "washing, cleansing, and drying textile fabrics, and materials, and "pulpy substances;" and it is stated that these improvements relate in some respects to the further developement of an invention patented by Charles Butler Clough in 1853, N° 1823, also of one granted to himself in 1855, N° 923, and of another granted to himself this year, N° 540. They are stated to be as follows:—

First, applying and using a rotating cylinder or chamber fitted with hollow partitions and casings, heated by steam or hot air, for *drying textile* and other materials.

Second, constructing dash wheels or rotating chambers with their shafts or axles, upon which they rotate, disposed obliquely as regards their own axis.

Third, introducing steam, chemicals, &c. from a stationary chamber attached to the beetling apparatus.

Fourth, applying and using in the manufacture of paper pulp, &c. any of these processes.

[Printed, 10*d.*]

A.D. 1856, May 21.—N° 1210.

GREENLEES, Edward.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the treatment and preparation or manufacture of "textile and pulpy materials;" and these improvements are preparing "such fibrous materials as rags, machinery waste, and "similar substances," so as to render them of greater commercial value, but how this is to be done is not stated. Also, treating pulpy materials by steeping "in a solution of calcined barytes, "either in the state of carbonates or sulphates, strontium, or "calcium," on "removal from such steep they are found to be "heavier, whiter, and generally more valuable."

[Printed, 3*d.*]

A.D. 1856, May 30.—N° 1278.

VAN DEN HOUT, Herman John.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the preparation of pulp for the manufacture of paper, millboard, and other like purposes;" and these improvements are employing curriers' shavings of skins or hides, by washing, pulping, and adding a certain per-centage of pulp from rope, &c.; or, offals and cuttings of all kinds of leather are put through a fuller's mill with fuller's earth, and beat, pulped, mixed with pulp from fibrous or textile materials, and made into paper, &c.

[Printed, 3*d.*]

A.D. 1856, June 6.—N° 1350.

GARDISSAL, Charles Durand.—"Improvements in ex"*tracting fibrous* and other products from vegetable substances," *so as to thoroughly* separate their fibres and render them fit "to be "either woven or reduced to a pulp." The machinery is also for extracting juices, syrups, oils, and also for "the trituration of clays "or compounds," but it is "principally adapted for separating the "fibre of plants from the matters which bind them together." A number of machines are described. "They are composed of "plane or curved surfaces furnished with flutes or grooves; one "of these grooved rubbing surfaces is formed of a series of "moveable parts linked together, and acting on the fixed rubbing "surface, which is also grooved, or the moveable rubbing surface "may be rigid while the stationary surface is formed in pieces "linked together," &c.

[Printed, 2*s*. 5*d*.]

A.D. 1856, June 7.—Nº 1359.

RUCK, William Denny, and TOUCHE, Victor.—Manufacturing paper from fibres not hitherto applied to such purpose. These fibres are of the stem and leaves of sugar cane, indian corn, and bulrushes, and "the material called bass or bast," and they are obtained by crushing, boiling in water, and in a solution of caustic alkali of a certain strength, and for a given time, separating the fibres, &c.

[Printed, 3*d*.]

A.D. 1856, June 9.—Nº 1366.

HOLDIN, James.—"Certain improvements in machinery or "apparatus for washing rags, which said improvements are also "applicable for washing other materials." The "rags or waste "are to be subsequently used in the manufacture of paper."

The invention is a revolving rag-washing machine, furnished on its periphery with buckets having their soles perforated, revolving in a reservoir of water, by which means a continuous shower is discharged through the rags. The machine is supplied with a series of agitators, particularly arranged. The invention is said to be, first, the novel application of the buckets, "or the water may "be introduced through a hollow shaft, or some other part of the "periphery of the wheel, without departing from the principles "of" the "invention."

Second.—"Employing agitators, with suitable means for driving "*them.*"

Third.—"The use of a driving apparatus, independent of the "main driving power, for turning the cylinder to a proper position "for feeding and discharging."

Fourth. — "The general arrangement and combination of "machinery."

[Printed, 10*d.*]

A.D. 1856, June 11.—N° 1386.

JOHNSON, John Henry.—(*A communication from Victor Courboulay.*)—"Improvements in the manufacture of safety "paper." These improvements consist in mixing in the pulp before the paper is made, or applying to the whole or portions of paper, "in any convenient manner, such as printing, or painting "with a brush, &c.," "a solution, more or less concentrated, "either of iodide of potassium or of iodide of ammoniacal "sodium, or of bromide of the same ammoniacal bases, or of any "salt or matter which contains iodine or bromine."

In certain cases "delible or indelible stamps, marks, signs, or "patterns, and delible or indelible watermarks may be employed, "serving as guides by which forgeries or transfers may be "detected."

[Printed, 3d.]

A.D. 1856, June 28.—N° 1526.

MESSAGER-ABIT, Charles Armand.—First, "treating the "plants ligneum spartium, stypa tenasissima, the chamærops "humilis, and the plants of the genera genista and stypa, for "obtaining fibrous materials."

Second, treating the sparta or alpha, or the dwarf palm, and other plants of the growth of Spain and Algeria for the production of a substitute for horse hair, by the application of steam; such plants being also applicable to the manufacture of paper pulp, carpets, &c.

[Printed, 3*d.*]

A.D. 1856, July 7.—N° 1597.

HEALEY, Edward Charles, and ALLEN, Edward Ellis.—"An improvement in preparing for use veneers, paper, and other "*fabrics or* sheets made of fibres;" and this improvement con*sists in corrugating* veneers, paper, &c.; and is effected by passing them through corrugated rollers and pressing them; but in the case of thick sheets of paper, they are formed in moulds which are corrugated, and further prepared, when necessary, by steeping in oil and baking, and rendered fireproof by alum water, or a solution of chloride of zinc, &c. Sheets having different qualities of material are made by adding, first, a layer of one quality of pulp into the mould, and then another, &c. The surfaces of the papier mache sheets are grained by dusting substances on to them, or "brushing over the faces of the "sheets," &c.

[Printed, *4d.*]

A.D. 1856, July 18.—N° 1693.

COWLEY, JOHN.—"Improvements in the manufacture of paper "from straw and other vegetable substances." And these improvements are said to consist in a particular arrangement of apparatus for submitting the straw to a solution of caustic soda, whereby it is converted more rapidly into pulp, and the pulp is also said to be of a superior quality. The straw, in suitable lengths, is placed in a "vessel fitted with a false bottom," and the alkaline liquor is discharged over it through a coiled tube heated by a furnace, &c.

[Printed, *10d.*]

A.D. 1856, July 25.—N° 1770.

WRIGLEY, THOMAS.—"Certain improvements in machinery or "apparatus for cleaning cotton waste, or other materials used in "the manufacture of paper;" and these improvements consist in arranging and using several "cone willows," supplying to each at its delivering end a feeding apparatus or cloth, so that the cotton waste, &c. may be carried into the "adjoining consecutive" willow, "and so on through any number of willows."

[Printed, *8d.*]

A.D. 1856, July 31.—N° 1816.

ROUTLEDGE, THOMAS.—"Improvements in the manufacture "of half stuff and paper;" and these are said to consist in treating "esparto and other raw fibres by a ley containing more lime than "is necessary to render the alkali caustic," "afterwards boiling "and rinsing the fibre in a solution of carbonate or bicarbonate of "soda."

[Printed 8d.

A.D. 1856, August 9.—N° 1879.

AMYOT, EUGENE ERNEST.—This invention did not proceed to the Great Seal. The title is "Improvements in the preparation of "pulp for paper, pasteboard, and other uses for which pulp is "required;" and these improvements are preparing wood "for "the manufacture of paper, pasteboard," &c., by stripping off the bark, cutting it into small pieces or shavings by an endless screw or otherwise, boiling in water with "protoxide of calcium," and triturating, when it will be "fit for the manufacture of paper."

[Printed, 3*d.*]

A.D. 1856, August 26.—N° 1986.

HORTON, JOSHUA, and HORTON, THOMAS.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "An improvement or improvements in the "manufacture of paper, pasteboard, and pulp;" and the invention is, using spent tan for the manufacture of paper, &c. The tan is pulped, treated with an alkaline ley, then ground.

[Printed, 3*d.*]

A.D. 1856, October 1.—N° 2297.

PATERSON, JOHN. — This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Improvements in the manufacture of paper;" and these improvements are said to be in the mode of washing and triturating or rubbing the rags, &c. for the production of pulp or stuff for paper. The materials are placed upon a grooved base of metal or stone, &c.; and upon this base a roller of metal or stone, &c. similarly grooved is made to revolve. The materials by this means are rubbed or reduced. The materials may be boiled in a boiler before or after being reduced. Steam is supplied into the boiler "by a "vertical rotating pipe."

[Printed, 3*d.*]

A.D. 1856, October 8.—N° 2355.

LEIGH, JOHN.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "The use or

" application of a certain substance or substances in the manu- " facture of paper for stiffening and sizing the same." The certain substance or substances are silicate of soda and silicate of potash, either alone or in combination with other thickening or sizing " substances." The same are mixed with the pulp in the process of the manufacture of the paper, or are used "after the manu- " facture, for the purpose of sizing or glazing it."

[Printed, 3*d*.]

A.D. 1856, October 13.—Nº 2393.

JOHNS, Charles Sydney.—This invention received provisiona protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is " Improvements in machinery or apparatus for preparing pulp " suitable for the manufacture of paper;" and these improvements are said to be as follows:—

First. A double iron vessel, the outer vessel not communicating with the inner one, but serving as a jacket to confine high-pressure steam, "conveyed into the space between the vessels by an induc- " tion pipe connected with a boiler, and is exhausted by means of " a pump," &c.; straw or other materials are placed within the inner vessel, " with caustic alkaline liquor," and steam is admitted.

Second. Another arrangement consisting of an iron vessel with the straw and alkaline liquor; within the vessel is a coil of pipe, a portion of which passes through a furnace, and is fitted at one extremity with a suitable expansion vessel. The coil is filled with water and heated to a high temperature; as the water circulates through the coil the heat is imparted to the alkaline liquor, kept under pressure as in the first.

Third. Heating the alkaline liquor in pipes communicating with the iron vessel.

Fourth. Heating the pipe or pipes conveying "the alkaline " liquor to the vessel by means of a bath of metal or any amalgam " of metals."

Fifth. An agitator, with shaft and arms hollow; to these arms are secured smaller perforated tubes; an archimedean screw or a series of curved blades is fixed on the shaft, and the alkaline liquor is forced through the hollow and perforated tubes.

[Printed, 3*d*.]

A.D. 1856, October 18.—N° 2442.

COLLYER, Robert Hanham.—Using the residue and substances extracted from the genus beta, that is, " beet root, mangel " wurzel, in any proportion whatsoever," mixed with the ordinary " materials used for the making of paper in manufacturing paper " and papier maché articles."

[Printed, 3*d*.]

A.D. 1856, October 28.—N° 2533.

AUBRIL, Adolphe.—" The novel application of a certain root " to the manufacture of starch, paper, and cardboard;" and this consists in applying the root of the bryony plant for the above purposes. The root is rasped to a coarse powder, the starch washed out, the fibrous residuum is covered with a caustic lye of a certain strength, boiled, washed, acidified, and again washed, is now fit to be used in the manufacture of paper or cardboard.

[Printed, 3*d*.]

A.D. 1856, November 8. N°. 2627.

BERTRAM, George, and McNIVEN, William.—" Im" provements in the manufacture of paper;" and these improvements are,—

First, in the arrangements of parts as well as the mechanical action "of" the "knotting machine" or pulp strainer, &c.

Second, " straining pulp by means of machinery or apparatus, in " which the strainer with its frame has a vertical vibratory motion " imparted to it by means of eccentrics, or other mechanical " equivalent."

Third, arranging and constructing vats for straining pulp, in which " a flexible diaphragm is fastened to the frame of the strainer and " to the bottom of the chamber or vat."

Fourth, arranging and constructing " hollow or tubular strainers, " whether of a cylindrical or polygonal shape, and either stationary " or moveable."

Fifth, " straining or cleansing pulp" by hollow or tubular " strainers used in conjunction with an exhausting apparatus, or " with an exhausting and forcing apparatus."

[Printed, 10d.]

A.D. 1856, November 10.—N° 2643.

STONES, William.—"An improved mode of sizing paper," by causing the pressure of the atmosphere to act on the surface of the web of paper, so that the size permeates "the body of the "paper." The web of paper is made to pass over air boxes having a partial vacuum, and current of size issuing from a slit plays upon its surface.

[Printed, 7*d.*]

A.D. 1856, November 15.—N° 2705.

DAVIES, George.—(*A communication from Jean Alphonse Pichot and Pierre Prosper Malapert.*)—"An improved paper suitable for "the filtration of liquids, the dressing of wounds, and for the "manufacture of envelopes, bags, bands, and for other similar "purposes;" and this improved paper consists of a woven or felted fabric covered on one or both sides with paper pulp. For some purposes the pulp on one side is to contain powdered animal or vegetable charcoal.

[Printed, 4*d.*]

A.D. 1856, November 19.—N° 2727.

BRINDLEY, William.—"Improvements in the treatment and "application of papier mâché for covering floors, roofs, and other "like useful purposes;" and these are,—

First, covering one or both sides of fabrics made of wool, hair, &c. with papier mâché, thus making floorcloths, &c. which are "noiseless when trod on."

Second, applying "corrugated sheets of papier mâché for roof-"ing, partitioning, and other similar purposes." The papier mache for this purpose is prepared according to patentee's Patent, N° 12,494.

[Printed, 3*d.*]

A.D. 1856, November 29.—N° 2828.

STUART, Laban Clarke.—(*A communication from Joseph Kingsland, junior.*)—"Improvements in machinery for reducing "fibres to pulp." These improvements are, employing a cylinder of large diameter as compared with its length, closed at both ends, in the interior of which is a revolving disc of nearly as large diameter as the interior of the cylinder. "The surfaces of the

" disc and of the interior of the cylinder are formed with grooves, " cutters, or knives." " The stuff is fed with water from an " elevated reservoir" " into the grinder at an orifice near its axis " on one side, and discharged by a similar orifice on the opposite."

[Printed, 8*d.*]

A.D. 1856, December 2.—N° 2851.

BROOMAN, Richard Archibald.—(*A communication from Henry Bouchet.*)—" Improvements in bleaching;" and these improvements are using chloride of lime " in conjunction with certain " agents." What is termed a " milk bath" is made by dissolving a certain quantity of " pearl ashes or of crystallized subcarbonate " of soda, or of sulphate of soda, in boiling water, or equal parts of " soap, crystallized subcarbonate of soda, and sulphate of soda may " be used." Preference is given to adding a solution of clear soft soap to the pulp, and pouring in gradually chloride of lime, to which has been added a certain amount of " crystallized salts of " soda," and dissolved in " clear river water."

[Printed, 4*d.*]

A.D. 1856, December 4.—N° 2877.

STUART, Laban Clarke.—(*A communication from Joseph Kingsland, junior.*)—" Improvements in drying sized paper, by passing it between a series of oblong trunks or cylinders, " perforated on " two sides, and so arranged that the hot air passing through " these perforations will come in contact with both sides of the " paper, and then escape." The air is heated in a chamber, or by steam pipes passing through the trunks, and it is " supplied by a " fan blower," &c.

[Printed, 6*d.*]

A.D. 1856, December 10.—N° 2927.

MACARTHUR, Alexander.—First, applying and using " for " boiling, bleaching, washing, or cleansing fibrous materials" " a " rotating vessel having chambers, communicating each on one " side, with intermediate spaces open at their outer ends, and " contrived to admit water or liquid to each chamber in succession, and allow it to issue thence as the vessel rotates with its " lower part immersed in the water or liquid."

Second, applying and using for the same purposes a "rotating "chamber, working either in an open trough or completely "enclosed in an external vessel or case," having contrivances for supplying liquids, steam, or gaseous matters.

Third, the system or mode (as above described) of constructing a single apparatus for the same purposes.

Fourth, the system of bleaching by chlorine or other gaseous matters in a close vessel or case, the materials being carried in an inner rotating vessel in chambers accessible to the gaseous matters.

[Printed, 9*d.*]

1857.

A D. 1857, January 3.—N° 29.

FERRO, Francesco.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "The "manufacture of paper from a vegetable or herb that grows in the "Isle of Sardinia and Spain, and which I purpose to call ferus "paper," by steaming the plant, pressing, reducing to pulp, washing, &c., &c.

[Printed, 3*d.*]

A.D. 1857, January 5.—N° 40.

BAKER, David.—Applying, by adding to the pulp in certain proportions, sulphate of magnesia, either alone or together with one or all of the following substances, namely, "sulphate of "alumina, aluminous clay, sulphuric acid, and muriatic acid, as a "substitute for or addition to alumina," or the alum of commerce now used in the manufacture of paper.

[Printed, 3*d.*]

A.D. 1857, January 20.—N° 164.

CALVERT, Frederick Crace.—Applying mucilaginous fluids instead of bone or animal size "for stiffening fustian, stuff goods, "and paper," thus substituting a non-putrefactive substance for one which is putrefactive. "The mucilage contained in flax or "bruised hempseed, the seed of the plantago psyillium, or any other "seed yeilding mucilage," is employed, also pectic acid procured [illegible] is used. The mucilage is [illegible] the above seeds, filtering, &c. The [illegible] by expressing the [illegible] water, to which a certain amount [illegible] and neutralizing the alkali by [illegible] is ready for use.”

[illegible]

[illegible] The [illegible] and these [illegible]

[illegible]

[illegible]

with sulphuric acid, and the solution of sulphate of magnesia treated with clay, solidifies, and is to be applied in manufacturing paper. Liquors containing sulphate of alumina may be evaporated to a certain strength, and drawn off to solidify; the result is applicable to the manufacture of the finer classes of paper, &c. When great purity is required " the sulphate of alumina is separated from the sulphate of magnesia, by the sulphate of magnesia " being driven off by heat;" a little soda or other alkali is added to neutralize any free acid consequent on driving off the magnesia; " in cooling, the product solidifies," &c.

[Printed, 4*d*.]

A.D. 1857, February 16.—Nº 454.

JOHNSON, John Henry.—" Improvements in machinery or " apparatus for the manufacture of pasteboard;" and these are said to consist of, first, the general construction of the machinery; second, the combination of a conical casing having spiral ribs with their cutting edges upwards, working in an "internal cone or " frustrum of a cone," " having ribs in an opposite direction with " their cutting edges downwards;" third, self-acting machinery " for regulating the thickness of the pasteboard," consisting of a roller pressing against the roller on which the pulp gathers receding gradually as the pulp increases in thickness, " until an " arm on each end of its axis fitted with a regulating screw causes " a "spring slide or hinged plate to be released, and so cuts and " loosens the sheet;" fourth, the arrangement by which the cutting, &c. of the sheet is effected; fifth, the construction and arrangement of a moveable frame having a strip of india-rubber, which descends and strips off the sheet of pasteboard after it has been cut; sixth, combining pressing rollers in connection with other rollers and endless felt bands, " whereby the pasteboard is " carried between the pressing rollers" within "two thicknesses " of felting," to allow the water to be pressed out.

[Printed 11*d*.]

A.D. 1857, February 17.—Nº 467.

HOUGHTON, Frederick Burnett.—" Improvements in the " preparation of materials used in the manufacture of paper," and these consist in reducing " the fibres of wood and the woody fibres " of vegetable matters by the aid of heated alkaline solutions," and heated " under pressure." The heat and pressure are to be far higher, and the strength of the alkali "greater than has hereto-" "fore been used." A boiler having in its interior wrought-iron tubes arranged so as to circulate hot water, "according to the " system known as *Perkin's system of hot-water circulation*," is employed.

[Printed, 4*d.*]

A.D. 1857, February 21.—N° 514.

TOUCHE, Victor.—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is "Im-" "provements in making paper from bass or bast," and these are said to consist in cutting it into short lengths, cleaning it by a blowing machine or by washing, steeping in "sulphuric, hydro-" "chloric, muriatic, or any other acid," beating and bleaching, after which it is "in a state of pulp suitable for making paper."

[Printed, 3*d.*]

A.D. 1857, February 23.—N° 524.

BROWN, James.—Impregnating in the pulp, or otherwise, paper with glycerine, which, it is stated, obviates the necessity of damp, ing the paper before printing, &c., upon it.

[Printed, 3*d.*]

A.D. 1857, March 3.—N° 618.

BROAD, James.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is " The application of artificial boards or papier machee, or patent " composition boards, composed (or partly so) of any vegetable " fibre, either in its raw state or worked up from old substances " to friction washers of every description, or wheeled carriage and " cart axles; also for covering wing and dash irons, and forming " heel boards for hansom cabs;" and the "composition boards " are manufactured from hemp, flax, old ropes, rags, straw, hop " bines, bark of trees, and all vegetable fibres, either" raw or worked up from old substances, as substitutes for leather.

[Printed, 3*d.*]

A.D. 1857, March 5.—N° 652.

NEWTON, William Edward.—"An improved manufacture " of tracing cloth," by applying a mixture of "spirits of turpen- " tine or camphine, or any other suitable hydrocarbon, castor oil," or some such vegetable oil, "Canada balsam, copal, or other vege- " table gum dissolved in any suitable menstruum. To these " ingredients may be added a small quantity of balsam of copaiva," and they are applied by means of a sponge or otherwise to muslin.

[Printed, 3*d*.]

A.D. 1857, March 18.—N° 760.

LOUBATIÈRES, François Barthelemy.—This invention did not proceed to the Great Seal. The title is, "Improvements in the " manufacture of paper, card, and pasteboard;" and these were said to be, "manufacturing paper, card, or pasteboard of alternate " layers of any suitable pulp & any other suitable tissue;" either or all the layers may be coloured "or receive a suitable chemical " substance, & have impressions or other conspicuous marks for " preventing forgeries."

[Printed, 3*d*.]

A.D. 1857, March 18.—N° 764.

HOPE, Lewis.—(*A communication from Harriet Smith, late widow and executrix of E. P. Woolrich*).—This invention received provisional protection, but is void by reason of notice to proceed not having been given within the time prescribed by the Act. The title is, "Improvements in the manufacture of paper;" and these consisted in applying the inner bark of the birch and maple for making paper.

[Printed, 3*d*.]

A.D. 1857, March 19.—N° 774.

MELLIER, Marie Amedie Charles.—"Improvements in " desiccating or drying paper and other goods in process of manu- " facture;" and these improvements consist "in exposing such " goods in a suitable chamber to the action of a change or cur- " rents of air, produced by a shaft." The air may or may not be dried before entering the chamber, by passing it "over or through " a bed or tray of chloride of calcium."

[Printed, 3*d*.]

A.D. 1857, March 21.—N° 803.

HEMMING, FREDERICK SHAND.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is "Improvements in the mode of treating peat, " mixed or not mixed with other vegetable or animal fibrous sub- " stances, and in the application of the same to various purposes." These improvements consist in triturating the peat well, when necessary removing earthy matters, mixing, when necessary, with other fibrous materials, and combining with "oil, resin, tar, india- " rubber, and gutta-percha, one, all, or any of them, in various " proportions;" also impregnating the mass with a salt so as to render it non-inflammable. Peat prepared in this way is manufactured into "articles which are now made of fibrous materials, " pâpier maché, wood, metal, or stone."

[Printed, 3*d.*]

A.D. 1857, March 28.—N° 865.

COWLEY, JOHN.—This invention did not proceed, the Law Officer having refused provisional protection. The title is, "Im- " provements in the manufacture of paper, and in utilising certain " refuse therefrom;" and these improvements were, first, combining with straw (as described in the Specification of Letters Patent, N° 1693, 18th July 1856), mangold wurtzel and beetroot in certain proportions, and rendering this paper water-proof by the application, before drying, of certain chemicals; second, drying paper by currents of air; third, using the refuse silica extracted from the straw as a manure; fourth, conveying and diffusing heat to the straw, &c., during "pulping, bleaching, and making, by a " new means."

[Printed, 3*d.*]

A.D. 1857, April 6.—N° 968.

SIBLET, LOUIS JEAN MARIE.—This invention received provisional protection, but notice to proceed with the Letters Patent was not given within the time prescribed by the Act. The title is, "An " improved pulp for the manufacture of paper;" and this consisted of mixing in a certain manner and in certain proportions the following substances, namely; chloride of lime, alum, carbonated colours, linseed oil, gum copal, acetate of lead, turpentine, essential oil of turpentine, nut oil, cotton, flax, white lead, wheaten flour.

[Printed, 3*d.*]

A.D. 1857, April 11.—Nº 1019.

MATTHEWS, John.—Constructing vats to be used in the manufacture of paper so that the pulp shall pass from the upper part of the vat to the lifter instead of passing from the middle or lower part, as in the ordinary vat. The vats are divided into two parts by vertical partitions, one part being much larger than the other. The large part or division contains the pulp, and the pulp flows over the partition into the smaller part or division, the bottom of which is perforated with holes, through which the pulp flows to the lifter, by which it is raised to the strainer.

[Printed, 6*d.*]

A.D. 1857, April 11. Nº 1029.

JOHNS, Charles Sidney. This invention received provisional protection, but notice to proceed with the Letters Patent was not given within the time prescribed by the Act. The title is, "Improvements in preparing pulp for the manufacture of paper;" and these improvements are similar to what are described in the patentee's Provisional Specification of his Patent, Nº 2393, 13th October 1856.

[Printed, 3*d.*]

A.D. 1857, April 14. Nº 1049.

WICKS, Peter, and GHISLIN, Thomas Goulston.—Adapting, applying, and preparing the fibrous plants of South Africa for the purposes of manufacturing pulp, paper, yarns, jute, coir, thread, &c., &c., also making artificial and substitutes for bristles, horse-hair, and whalebone, &c.; and for obtaining gums, oils, dyes, essences, spirits, medicines, syrups, &c., &c. The plants are cut, stripped of the outer bark, rolled, soaked, cleaned, combed, &c. The following are some of the plants:—"Junceæ, "serratus, trista, &c., aloe arborea, &c., sansevieria, malvaceæ, "Watsonia latifolia, nervoso humilis, papyraceæ, &c., restiaceæ, "gladiolus, antholyza, lapeyrousia, &c., tulipa beyniana, &c., &c.

[Printed, 4*d.*]

A.D. 1857, April 20.—Nº 1107.

MARTIN, John Cowdery.—"An improvement in the manufacture of paper;" and, first, preventing the creasing to which paper is liable in the process of rolling or glazing in the web or length, by passing it over a fixed curved surface; second, rolling and glazing paper in the web, "by an arrangement of short rolls " obviating the use of long rolls, which are liable to spring or " drop towards the middle of their length."

[Printed, 10*d.*]

A.D. 1857, April 30.—N° 1214.

SPOONER, Lucius Henry.—Manufacturing "paper and paper " pulp from the plants called zostera, otherwise named wrack grass " or wreck grass." The plant is picked and sorted, &c., treated with alkali, either lime water or milk of lime, or a solution of caustic soda or potash, or carbonates of soda or potash, or with a solution of both lime and soda, steeped in a dilute acid, and for some purposes may now be used, but for others it must be further washed, bleached, &c., &c.

[Printed, 3*d.*]

A.D. 1857, May 6.—N° 1283.

NEWTON, William Edward.—First, "the employment and " use of a vacuum chest" having two compartments communicating with the exhaust pipes by separate cocks, so that either or both of the compartments "may be put in communication " with the exhaust pipes."

Second, the use of an air and water trunk or reservoir, having a stand pipe communicating with an external pipe which has a cock, so that the water may be drawn off at different altitudes, according to the thickness of paper required. Also an arrangement of blast pipes, having a series of jets for the purpose of trimming the edges of the pulp or paper as it is formed on the cylinder.

Third, stretching the felt apron by a curved rod with rollers upon it; the rollers being connected to the rod by coiled springs. This arrangement is also applicable for stretching, &c., woven fabrics.

Fourth, an arrangement of a cylinder, with wet press cylinders rotating at a different speed from it, for the purpose of distending longitudinally the felt apron which receives the paper from the wire-cloth apron, and passes it between the wet press cylinders.

[Printed, 8*d.*]

A.D. 1857, May 23.—N° 1456.

TRAVIS, Edwin, and CASARTELLI, Joseph Louis.—" An " *improved* apparatus for regulating the supply and discharge of

" steam, air, water, and other fluids," which is called a "steam " trap;" and it is stated among a great number of uses to which it is applicable, that it may be used "in the manufacture of paper, " felt, and other substances." It is said to be a box of suitable metal, with a slide tube at one end, an adjusting plug, piston, or valve at the other, and an escape tap or hole at the side, "which " forms a simple and efficient apparatus for regulating the supply " and discharge of the steam, air, water, and other fluids;" this is fixed on to the end of an additional pipe in a certain manner to the ordinary steam pipe or vessel upon which it is intended to act. On the escape of steam through the tap or hole, the additional pipe expands, and the plug piston or valve is adjusted so as to stop the escape of steam, and when it cools it contracts and draws the sliding tube from the piston, causing it to open and "allow " any condensed steam or water to escape." It is stated "that " the contraction and expansion of a metal pipe in a straight form " has been used for some purposes, but not in a manner and in " combination with the arrangement described."

[Printed, 1*s.* 1*d.*]

A.D. 1857, May 30.—N° 1527.

CLARK, Moses, OLDFIELD, Henry, and SALMON, William.—Employing friction rollers in connection with exhaust or suction apparatus for the purpose of extracting the superflouus moisture from the pulp or unprepared paper. The vacuum box underneath the wire web was rubbed upon by the web, and it is to substitute a rolling for a running friction by attaching rollers to the vacuum box, upon which the web travels.

[Printed, 6*d.*]

A.D. 1857, June 4.—N° 1570.

JENNINGS, Henry Constantine.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is " Improvements in the manufacture of paper, " papier maché, and other similar substances;" and these improvements are said to be treating the grains or other solid deposits of the spent wash of breweries as follows:—Heating in water, draining, steeping in caustic soda, washing, treating with sulphuric acid, adding afterwards chloride of lime, washing, &c., so as to render the pulp " fit for manufacturing into paper."

[Printed, 3*d.*]

A.D. 1857, June 5.—N° 1578.

COLLYER, **Robert Hanham**.—"An improved mode of pre- " paring the residue of beet root, mangel wurtzel, and other species " of the genus betâ, left in sugar making and distillation, to be " used in making paper, papier maché, millboard and other similar " manufactures," and it is stated that a Patent was had by the patentee, N° 2442, 1856, wherein a "claim is made to the exclusive " use of the residue and substances extracted from the genus betâ;" but that since that, he has discovered that other Patents have been had and attempts made to use these plants, but without success, and this is owing to the washing away by water and alkalies, &c., and by pressing, &c. "the proteine substances" or "albumino- " mucilaginous substances," on the retention of which, with their " tenacious cohesion, agglutinating, and sizing" properties, depends the value of the beetroot residue after distillation as a paper-making material, and this is said to be effected by boiling the residue, by preference under a certain pressure, adding in some instances certain quantities of carbonate of soda or sulphuric acid. " The residue is now prepared and ready to be pulped, and then " mixed with other paper-making materials in like condition and " in the proportions required."

[Printed, 4*d.*]

A.D. 1857, June 5.—N° 1587.

NEWTON, **William Edward**.—(*A communication from M. Voelter, junior.*) — Manufacturing paper, papier mâché, card-board, &c. from wood or other ligneous or fibrous substances, by employing, first, a novel arrangement of machinery for pulping the wood; and, second, an arrangement for assorting the fibres.

The first machine is a segmental frame provided at its periphery with a number of adjustable holders for supporting the wood to be operated upon; underneath this frame is a cylindrical stone or other grinding or rasping surface supplied with water, upon which the wood is pressed by the holders. The wood reduced is carried by a shute to the second machine consisting of a riddle or sifter to which a jumping motion is given by means of a cam or in any other manner, so as to shake the pulp through the sieve and leave the knots, &c. The pulp afterwards is put through a series of sorting cylinders. The fibres unable to pass through the cylinders are removed by means of rollers covered with flannel, &c. for subsequent treatment.

[Printed, 1*s.* 8*d.*]

A.D. 1857, June 9.—N° 1607.

ROBERTSON, John.—" Improvements in machinery or apparatus for treating or preparing and boiling rags and other " materials," " prior to their being used in the manufacture of " paper." The apparatus consists of a double or annular boiler (the space between being filled with steam), placed in a horizontal position with a flange at each end, which rests upon antifriction wheels, actuated by means of gearing driven from a main shaft, by an arrangement of a two-way cock, &c., admitting steam between the boiler and caustic liquor into the inner vessel. The other end of the vessel is removeable, so as to charge and discharge the boiler, &c.

The improvements are, first, the general arrangement and construction of machinery, &c.; second, using and applying a rotatory boiler, as described; third, treating or preparing rags " in a rotatory boiler to which the cleansing agent and steam can " be admitted at pleasure without stopping or impeding the " motion of the boiler;" fourth, communicating a rotatory motion by means of antifriction wheels; fifth, slinging the ends or doors of boiling vessels horizontally disposed; sixth, arranging the internal parts of vessels with a perforated cylinder, and fins or partition pieces radially disposed, the more readily to break up, &c. the rags under operation.

[Printed, 10*d.*]

A.D. 1857, June 10.—N° 1623.

BROWN, James.—Combining glycerine with pulp from which paper is to be made, or with paper at any stage of its manufacture or in coating paper after its manufacture with glycerine.

[Printed, 3*d.*]

A.D. 1857, June 19.—N° 1710.

SOREL, Stanislas Tranquille Modeste.—The title of this invention is, " New chemical compositions, producing either house " paintings, cement, or plastic paste to be moulded;" and it is stated that the several chemical compositions may be made by *combining* in suitable proportions, which are given, chloride of zinc or any other chloride isomorphous with it, a tartrate, muriatic acid, a feculent or amylaceous substance, water, oxide of zinc; and a paint is described suitable for many purposes, and at the same time a plastic substance, which may be mixed with fibrous substances; and it is stated it can replace in a great many cases plaster, alabaster, marble, ivory, caoutchouc, gutta percha, gelatine, pasteboard, papier maché, and several other substances.

[Printed, 4*d.*]

A.D. 1857, June 22.—N° 1744.

SEROPYAN, Christopher Dicran.—"A mode of preparing " bank notes, bills of exchange, and other papers, to prevent " counterfeiting by photography and its kindred processes, and a " mode of preparing an ink for the same;" and this is said to consist "in using two or more colours which do not reflect nor " transmit, but absorb the chemical rays of light," one of which, by printing, &c., covers "the surface with a tint or ground of a " red, orange, or yellow shade or color, while an ink of a different " color or shade" is "used for printing the other parts of the " note, that is, the obligatory and ornamental parts." This ink must be equally, if not more fugitive than the surface colour of the paper; and it is made by taking, after washing it, the black precipitate obtained by adding an alkali to an aqueous solution of sulphate of iron, mixing it with gallic acid or extract of logwood, drying and grinding in boiled linseed oil, &c.; "if not black enough, " a little blue may be added."

[Printed, 3*d.*]

A.D. 1857, June 25.—N° 1781.

WRIGHT, Josiah, WRIGHT, Alfred, and ROBERTS, Francis.—Employing the stalk of the rhubarb plant for the manufacture of paper, wine, and spirits. The stalk is taken at any age, passed between rollers to express the juice, the fibres are washed, &c., &c. and alone or otherwise made into paper. In making wine the juice is boiled, poured upon a certain quantity of lump sugar, fermented with yeast, strained, placed in a cask, &c. In making spirits the juice should be treated as in the first stage of making wine, and after fermentation distilled.

[Printed, 3*d.*]

A.D. 1857, July 8.—Nº 1898.

NISSEN, Hilary Nicholas.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is, "An improved method of making impressions "similar to watermarks upon paper;" and these consisted in damping the paper carefully, so as not to remove its size, subjecting it to pressure under metal types, &c., in an ordinary hand or other printing press. To attain a lasting impression, "the "tympan" is removed, "and thus the paper is exposed to the "metal type or device on one surface, while the other is in "contact with the platten or with the cylinder."

[Printed, 3*d*.]

A.D. 1857, July 14.—Nº 1953.

CALVERT, Frederick Crace, and **LOWE**, Charles.—"Improvements in the manufacture of size," and these are said to consist in combining or admixing soluble amylaceous substances, salts of soda, potash, magnesia, ammonia, and vegetable mucilage, and applying the same as a substitute for the animal size now in use for sizing, &c. paper, &c. The mucilage is obtained from linseed, &c. The seed, &c. crushed, is boiled with a given amount of water, the fibrous matter separated on a sieve, and the mucilaginous liquid returned to a boiler has the mineral salts and soluble amylaceous matters dissolved in it, both in certain proportions, and it has been found advantageous at this stage of the manufacture to introduce a certain amount "of sulphate of zinc to "the gallon of size."

[Printed, 3*d*.]

A.D. 1857, July 23.—Nº 2027.

NORRIS, Charles.—First, producing "crude sulphate of "alumina by the spontaneous combination of the alumina con-"tained in china clay with sulphuric acid;" second, using crude sulphate of alumina so produced in "dyeing, printing, paper "making, and such like purposes."

The clay, hot from the usual preparatory apparatus, is mixed with a certain amount of sulphuric acid moderately hot from the usual evaporating boilers, and about 1·75 at 60° Fahrenheit, and thrown into a heap. "If both the ingredients have been allowed

" to go cold before mixing they do not readily combine, but by " thrusting a red-hot poker a few inches into the heap will immediately commence the action, which quickly pervades the whole " mass, whatever number of tons it may consist."

[Printed, 4*d.*]

A.D. 1857, July 29.—N° 2066.

KENYON, Hartley.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is " Improvements in the treatment of certain compounds of " silica, alumina, sodium, or potash, & the application of such " compound in the processes of printing, dyeing, tawing, paper " making, or in any other process in which the alumina of com- " merce is employed," and the certain compounds of silica, &c. are " clays or spars (such as fluor spar or felspar)." These are to be ground, and in some cases calcined, mixed with a certain amount of chloride of sodium, or nitrates of soda or potash, with boiling water and Glauber salts, or acid sulphates of potash and soda, and distilled with a certain addition of sulphuric acid, &c.

[Printed, 3*d.*]

A.D. 1857, July 29.—N° 2069.

PLUNKETT, William George.—First, applying " the bark, " leaves, and stems of wood of the lavatera arborea (sea-tree mallow) " otherwise called arborem marina nostras, also the bine or straw of " humulus lupulus or hop plant, and trifolium pratense or rubeus " (common red clover), separately or mixed together, or with rags " or other suitable material," to the manufacture of pulp for paper, millboard, &c. &c.

Second, applying the fibrous portion of the bark of the sea-tree mallow " to the manufacture of yarn of hemp for textile pur- " poses, and for ropes, cordage, mats," &c.

[Printed, 4*d.*]

A.D. 1857, August 10.—N° 2139.

BERTRAM, James, and JULLION, John Louis.—First, employing " desiccated air for drying paper in the process of " manufacture," desiccating the air by means of chloride of calcium or other suitable chemical agents.

Second, applying the air desiccated, or not, to the surface of
" paper through the medium of perforated hollow drums, or
" similar mechanical contrivances, placed within the said drying
" cylinders in lieu of ordinary fans, in such manner as to admit air
" under pressure by any of the usual mechanical means."

[Printed, 1*s*. 1*d*.]

A.D. 1857, August 18.—N° 2191.

NIGHTINGALE, CHARLES.—" Improvements in and applicable " to machines for tearing or reducing rags and other fabrics," and these consist in combining with rag-tearing machines " a wire " gauze cylinder revolving over a delivery cloth, combined with " an exhaust for withdrawing and conveying away the light dust, " and presenting its escape in the usual manner from the ma- " chine." No mention is made of any application of these rags so treated.

[Printed, 8*d*.]

A.D. 1857, September 18.—N° 2426.

LICHTENSTADT, DAVID.—Making pulp for manufacturing paper, &c., by taking " leather or any kind of animal fibrine, " whether in large or small pieces, shavings, or shreds," and when tanned treating " it with caustic, lime, &c., or limy matter mixed " with sal-ammoniac, ammonia, or ammoniacal compounds," washing with an acid liquor, and washing with water, and pulping in the usual way, when it may be used alone or mixed, " with any " quality of rags." Untanned fibrine is treated with lime, cold caustic, potash, and gypsum, for which alumina might be substituted, and pulped, &c.

[Printed, 8*d*.]

A.D. 1857, September 30.—N° 2512.

PAISLEY, JAMES, and **BERTRAM**, GEORGE.—Applying "in " various stages of the paper manufacture, but particularly in the " routine or process appertaining to the rag engine, and that of " the actual paper-forming machine," a hollow permeable rotatory cone set horizontally, through which the water from the rag engine is made to pass by means of a pipe with a perforated end, leading it in at the smaller end of the cone and distributing it in the interior of the cone, and " thus retaining within the " cone the fibre contained in the water." This fibre is finally discharged by the wide end of the curve into a receiver, lined with a permeable material, " from whence it is removed for use in the " manufacture of paper." What is considered novel and original in the apparatus in the manufacture of paper is, first, the general arrangement and construction of apparatus or machinery; second, the system or mode of preventing the waste of pulp or fibrous materials; third, the system or mode of subjecting waste waters to a straining or separating process, to separate, &c.; fourth, the system or mode of treating waste waters, &c.; and fifth, applying and using a rotatory conical strainer into the smaller end of which the fluid matter to be filtered is conducted.

[Printed, 7*d.*]

A.D. 1857, October 9.—N° 2590.

POISAT, ANTOINE MARIE.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is " A machine for preparing wood to be reduced " into pulp for the manufacture of paper, card, and pasteboard," and the machine is said to consist of a revolving cylinder having projecting teeth, against which the wood is pushed, &c.

[Printed, 3*d.*]

A.D. 1857, October 9.—N° 2591.

PUJOL, LÉON.—This invention received provisional protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act. The title is " Improvements in envelopes and letter paper;" and this consists, first, with envelopes, giving to the flap by which the envelope is closed a peculiar form, which allows to unfasten a part of the said flap whilst the envelope remains closed, on this may be the address of the sender, so that clerks at the Post Office, &c. may return the letter without seeing the contents; second, applying "the same principle to letter paper," the mark or direction being placed " on the inside of that part of the margin of the paper which is " to lay uppermost on the back part of the letter where the " paper is folded up as a letter." The part of the margin "being " marked on the outside by any suitable sign," is "only to be " cut off in order to see the direction."

[Printed, 3*d.*]

A.D. 1857, October 15.—N° 2635.

ROOKE, William Ashby.—Employing dextrine in the making and sizing of paper, either alone or in combination with any other materials, animal, vegetable, or mineral, now used in sizing paper. The dextrine either in solution or dry, or alone or with other matters, is added to the bath, cistern, or vat containing the paper pulp.

[Printed, 3*d.*]

A.D. 1857, October 15.—N° 2642.

GIBBS, Joseph.—"A method of treating phormium tenax in " order to render it fit for the manufacture of pulp," and this is cutting the plant at maturity, but in a green state, pressing, cutting transversely into short lengths, passing it through a rag engine, squeezing, &c.

[Printed, 3*d.*]

A.D. 1857, November 4.—N° 2801.

DUBUS, Romain Ignace Charles.—Applying the bulb or roots of the lily tribe to the manufacture or production of "starch " or farina, an alcoholic liquor, and a natural ferment or yest," besides a substance which "may be employed as food for cattle or " for the manufacture of paper." The lily known as the Turk's cap is preferred. These are washed, the fibrous roots removed, the bulbs bruised, and the pulp steeped, and thrown upon a sieve, is washed until the residue will no longer stick to the fingers. The residue "may be employed as food for cattle, or for the manu- " facture of paper." The starch is deposited at the bottom of the mucilaginous liquid; the mucilaginous liquid fermented may be used for distillation or for making vinegar. At the bottom of this liquid is the yeast.

[Printed, 3*d.*]

A.D. 1857, November 10.—N° 2843.

BARTLETT, Henry Critchett.—Adding to the paper pulp, " starch;" maize starch is preferred. The starch is placed in a sieve, underneath which is a basin of nitric acid. On heating the basin fumes are evolved, and after some time the starch is conveyed to a pan warmed by charcoal; the starch is kept stirred and heated until a small portion tested in another basin, by a slightly increased heat, changes color, and becomes clammy, when the mass is cooled, reduced to a fine powder, mixed with water, and strained through linen and flannel; the liquid with the suspended starch is mixed with the pulp in the chest. The paper in a green state is passed over cylinders.

[Printed, 8*d*.]

A.D. 1857, November 11.—N° 2847.

WAHL, Otto William.—"Improvements in manufacturing "farinaceous products from potatoes;" and these improvements consist of an arrangement of machinery for rasping potatoes, and the pulp thus obtained together with water, is carried by buckets "on endless bands in order constantly to supply a cylindrical "sieve of wirecloth, and within this sieve an axel with brushes "constantly revolves;" "below this sieve is a second flat fine "sieve of silk, which is kept constantly shaken," underneath this sieve are separate vessels to recover the products, and one of the products it is stated "may be at once dried and is ready for use" "as a food for stiffening in the manufacture of paper."

[Printed, 9*d*.]

A.D. 1857, November 14.—N° 2864.

WHEELER, George Printy.—First, "subjecting flax, straw, "and other like fibrous materials in their crude or unretted state, "and also 'scutching hards and tows,' to the macerating process "described."

Second, using the macerating solution for preparing fibrous materials for the reducing engine.

Third, submitting raw fibrous materials containing resinous or siliceous matters, while still moist from the macerating process, to the action of the reducing engine.

The macerating process is as follows:—The material is placed in cylindrical vessels made of wirework or pierced metal, and a number of these vessels are packed up tight in a steam-tight vessel and submitted to steam pressure; and the macerating solution which consists of the following substances in certain proportions, namely, water, slaked lime, chloride of sodium, sulphur, potash, or soda caustic; sometimes the potash or soda may be dispensed with.

[*Printed, 10d.*]

A.D. 1857, December 3.—Nº 3001.

BLACK, Elijah.—First, treating and preparing grain in order to obtain mucilaginous substances, &c., therefrom by steeping, washing, bleaching, and drying it in a whole or undivided state prior to its being ground in the mill.

Second, treating and preparing bulbous roots, &c., similarly, and to obtain starch, &c. therefrom.

Third, operating upon vegetable substances containing starch, &c., "by means of alkaline, acidulated, or saline solutions."

"The grain or root in a whole state is steeped in a solution of an alkali, or an acid solution or a saline solution; the time, &c. of steeping varies with the nature of the substance from four to twenty days, sometimes the substances are submitted to pressure and heat, some of the substances may be submitted to a solution of malt instead of the above. After steeping, the substances are dried, &c., and ground, and the starchy materials, gum, or dextrine, it is said, are well adapted as a "finishing material for paper, &c."

[Printed, 4d.]

A.D. 1857, December 15.—Nº 3075.

HOBBS, James, junior.—"An improvement in the manufacture "of copying paper;" and this consists in impregnating "copying "paper" with protosulphate or some other suitable salt of iron either by adding it to the pulp, or after the paper is made by passing the paper through felt rollers supplied with a solution of the salt. It is stated that a good copy can be taken on a damp sheet of this prepared "copying paper" from a letter written with ordinary ink in a copying press, and a letter written with the above ink, to which a little pyrogallic acid and sugar has been added, and covered with a damp sheet of the said prepared copying paper, will yield a good copy by "simple pressure of the hand."

[Printed, 4d.]

APPENDIX.

A.D. 1838, February 20.—N° 7570.

DE BREZA, Eugene Richard Ladislas.—" A chemical com-
" bination or compound for rendering cloth, wood, paper, and
" other substances indestructible by fire, and also preserving them
" from the ravages of insects ;" employing " alum, sulphate of
" ammonia, boracic acid, animal glue, and starch, combined in
" the proportions, in the order, and at the temperatures " given
" and applied in the manner directed, for the purpose of rendering
" cloth, wood, paper, and other substances, indestructible by
" fire," &c.

[Printed, 3*d.* See London Journal (*Newton's*), vol. 14 (*conjoined series*), p. 169 ; Mechanics' Magazine, vol. 32, p. 181.]

A.D. 1840, February 22.—N° 8391.

KERR, Thomas.—" A new or improved mortar or cement for
" building ; also for mouldings, castings, statuary, tiles, pottery,
" imitations of soft or hard rocks, and other useful purposes ;
" and which mortar or cement is applicable as a manure for
" promoting vegetation, and destroying noxious insects ;" and in carrying out these several objects a number of substances are employed. These are divided into four sets of substances, so much of each or all being directed to be employed, according to the nature of the object to be effected.

No. 1, consists of rakings of roads, streets, &c., scrapings of houses, &c., ashes of fires, sand, pounded stone, and such like substances, mineral or vegetable.

No. 2. Chalk, and such like substances, " of a drying and
" retaining nature, ground to a fine powder."

No. 3. " Consisting of either tar, or pitch, or oil, or resin," or some bituminous, fatty, or inflammable substance, such as Archangel tar, coal tar, pitch, whale oil, linseed oil, &c.

No. 4. " Bay or common salt."

Ropes, cables, bands, rick cloths, tarpaulings, &c. &c., and most other spun, twined, woven, and felted articles, may be made not only waterproof but stronger, by steeping in mixtures of No. 3 and No. 2. " Papers, & carding, & boarding " will also be rendered waterproof by adding to the vat, or letting flow upon the web, mixtures of No. 3 and No. 2, " before it enters between the " rollers."

[Printed, 5*d.* See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 415; Inventors' Advocate, vol. 3, p. 131.)

A.D. 1845, March 28.—N° 10,583.

TYLOR, Henry.—" Improvements in fabrics used for and ap- " plicable for curtains, screens, blinds, and other like useful pur- " poses ;" and these consist in manufacturing, in preference of paper and pasteboard to other fabrics, blinds, transparent and otherwise. The opaqueness may be given to the paper by " incor- " porating suitable coloring matters with the pulps in the course " of manufacture."

[Printed, 4*d.* See London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 39.]

A.D. 1845, July 10.—N° 10,760.

BOSSY, Antoine.—" Improvements in manufacturing water- " proof paper," which consist in submitting the pulp to repeated solutions or compositions. These are composed of the following substances combined in a certain manner, and in certain proportions :—" Psylium (a drug well known to chemists)," water, soap made from resin, or palm or cocoa-nut oil, &c. Second solution, sulphate of alumina. A third solution same as first. A fourth solution same as first; after which it is beat, sized with vegetable size, " or in place of vegetable size animal may be used when the " paper is sufficiently dry."

[Printed, 3*d.* See Repertory of Arts, vol. 8 (*enlarged series*), p. 99; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 78; Patent Journal, vol. 1, p. 182.]

A.D. 1846, January 20.—N° 11,055.

BURKE, William Henry.—" Certain improvements in the " manufacture of fabrics, which may, if required, be made air and " waterproof, a part of the materials employed herein being in- " tended to produce covering for vessels of capacity," and one of these improvements is combining gutta percha, india-rubber, &c., with paper, which by this is rendered fit for the coverings of books, &c.

[Printed, 7*d.* See London Journal (*Newton's,*) vol. 30 (*conjoined series*), p. 81.]

A.D. 1847, November 25.—N° 11,979.

HUTCHISON, WILLIAM.—(*A communication.*)—"Improvements "in treating pasteboard and other substances, rendering them "compact and impervious to wet, frost, vermin, and destructive "agents;" and this consists in drying the pasteboard, &c., at a given temperature, and immersing it in a boiling solution, composed of resin or pitch, and oils, tallow, or any other greasy matter in certain proportions; "with the addition, together or "separately of pounded stone, chalk, slate, &c., thoroughly dried, "and then mixed therein as required, will produce, after ex- "posure to the action of cold air, a flexible but compact and "impervious substance, for the purposes of sheet roofing, sheath- "ing of ships, railway and other carriages, pipes, tiles, &c.; and "will effectually resist the action of air, water, frost, vermin, and "other destructive agents; paper, old rags, hemp, flax, jute, tow, "ropes, and cordage, even hay and straw, and other vegetable "matter, either mixed together or not, and formed into a sub- "stance, being prepared for that purpose by being boiled or "mashed together, and then shaped to the desired form, after- "wards thoroughly freed from all moisture, as herein-before "mentioned, and submitted to the above boiling solution, which "will produce a similar result, as above stated."

[Printed, 4*d*. See London Journal (*Newton's*), vol. 32 (*conjoined series*), p. 282; Patent Journal, vol. 4, p. 455; Artisan, vol. 6, pp. 86, 182.]

A.D. 1850, December 27.—N° 13,431.

MENOTTI, CELESTE.—"Certain chemical compositions for "rendering cotton, linen, woollen, silk, and other fabrics imper- "vious to water, and fixing colors in dying;" "which com- "position," is called "hydrofugine;" "the following salts may be "employed to make such solutions:"

First. "Sulphate of alumina, or sulphate of alumina and potash, "or alumina and ammonia, or sulphates of iron, or copper, or "chloride of tin."

Second. "Oleic, stearic, or margaric acids, or soap or soapy "substances."

Third. Alcohol of a certain strength is poured on the fatty acids or soaps, and amalgamated. The mixture is put on to a felt filter, the liquid extracted by pressure, "and the salts dried," and ground and dissolved in soft water and filtered. Into this solution the material "to be rendered impervious to moisture and pervious to "air," is passed and dipped, and afterwards dried. Packing paper pulp is treated with this, and card-board pulp is treated in the same manner; "or it may be dipped in a bath of basic salt of "alumina or tin, if required to be white; if, on the contrary, it is "required to be slightly colored, it is dipped in a solution of "basic salt of iron or copper."

In a disclaimer enrolled 27 June 1851, it is stated that the invention, which was intended to have been described under the following words in the title, "*and fixing colors in dying,*" is not of such public utility as would make it desirable, therefore it is disclaimed.

[Printed, 4*d.* See Mechanics' Magazine, vol. 55, p. 17; Patent Journal, vol. 11, p. 161.]

A.D. 1851, December 31.—N° 13,886.

FROGGART, Robert Beck.—"Improvements in the preparation of certain compounds to be used for the purpose of rendering woven and textile fabrics, paper, leather, wood, or other "materials or substacces waterproof and fireproof, and also in "machinery employed therein." These combinations are :—

Firstly, "graphite prepared by fusing about 10 parts of iron "filings with 90 parts of carbon for about ten hours."

Secondly, "animal or vegetable matter, as glue, gluten, resin, "mucus, or any gummy substance," dissolved in "water in "different proportions, according to the materials or substances to "be made waterproof."

Thirdly, "blood is heated until the serum, which is a clear transparent liquid, floats on the top, and the crassamentum is precipitated."

Fourthly, "a strong solution of protosulphate of iron, exposed "to the atmosphere for some days," "or the basic red sulphate of "iron, double sulphate of potassa, and alumina or hydrochlorate "of ammonia."

Fifthly, "oxegenated oils or fatty substances." The materials to be rendered fire or waterproof, or both, are treated in a certain manner with these substances, one, more, or all.

Second. "The machinery or apparatus described for impregnating oils or fatty substances with oxegenated gas, and freeing "such substances from impurities."

"A material or substance which will serve for the purpose of floor "cloths, felting, mouldings, cornices, or architectural ornaments,

" made of or worked on or in, at present, by plaster or papier " maché, et cetera, is made by grinding to a fine pulp fleshings " or parings from hides or any animal matter, which mix with " fine-ground sawdust from cork or any other vegetable substance, " as wood or cotton waste, et cetera, to the consistency of thick " paste. Then form them to the required shape in moulds or " any other convenient manner, and, when dry, steep them in a " strong solution of the proto-sulphate of iron, and if the material " requires a certain degree of pliability, use the oxygenated oil or " fat."

[Printed, 1*s.* 1*d.* See Mechanics' Magazine, vol. 57, p. 36.]

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